0967-065-3010
Formerly 0280-282-7002

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NAVSHIPS 92206

INSTRUCTION BOOK

for

ELECTRICAL FILTER ASSEMBLY AN/SRA-12 & AN/SRA-12A

ELECTRONICS OF CLEARFIELD
CLEARFIELD, PENNSYLVANIA

EDWIN I. GUTHMAN COMPANY, INC.
CHICAGO, ILLINOIS

BRUBAKER MANUFACTURING COMPANY, INC.
LOS ANGELES, CALIFORNIA

DEPARTMENT OF THE NAVY

BUREAU OF SHIPS

0967-065-3010
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INSTRUCTION BOOK

for

ELECTRICAL FILTER ASSEMBLY AN/SRA-12 AN/SRA-12A & AN/SRA-12B

Manufactured By

LIECO INC.
SYOSSET, N. Y.

DEPARTMENT OF THE NAVY

BUREAU OF SHIPS

CONTRACT: NObsr 75181
NObsr 75558
NObsr 75690

Approved by BuShips: 19 April 1954

Change Number Three: 18 April 1960

LIST OF EFFECTIVE PAGES

PAGE NUMBERS	CHANGE IN EFFECT	PAGE NUMBERS	CHANGE IN EFFECT
Title page	Change 3	5-0	Original
A	Change 3	6-1	Original
B to C	Original	7-0 to 7-2	Original
i, ii, iii	Original	7-3 to 7-4	Original
1-0	Original	7-5 to 7-6	Change 1
1-1	Change 3	8-0A	Change 2
1-2	Change 1	8-0B	Change 3
2-1 to 2-3	Original	8-1 to 8-6	Original
3-0 to 3-1	Original	8-7	Change 1
3-2	Change 3	i-0 to i-2	Original
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4-0	Change 3		

INSTRUCTION SHEET

CHANGE 3 to Instruction Book for Electrical Filter Assembly AN/SRA-12
NAVSHIPS 92206

This permanent change revises the book to reflect the equipment changes made by Field Change 1-AN/SRA-12.

Maintenance Support Activities shall insert this change in the Instruction Book immediately upon receipt. When this change is included in the manual the manual shall cover the equipment as though Field Change NO. 1 has been accomplished on the equipment.

Holders of the equipment accompanied by Instruction Books shall not insert change 3 in the manual until accomplishment of Field Change NO. 1. No temporary corrections are superseded by change 3.

1. Remove superseded pages and insert revised pages as indicated below:

Page	*Remove*	*Insert*	*Page*	*Remove*	*Insert*
TP/A	Ch. 2/Ch. 2	Ch. 3/Ch. 3	3-3/4-0	Orig/Orig	Orig/Ch. 3
1-1/1-2	Ch. 1/Ch. 1	Ch. 3/Ch. 1	8-0A/8-0B	Ch. 2/Ch. 1	Ch. 2/Ch. 3
3-1/3-2	Orig/Orig	Orig/Ch. 3			

2. Destroy superseded pages but not until the complete manual has been checked against the "List of Effective Pages."

3. Insert this Instruction Sheet just behind the front cover immediately above the Instruction Sheet of Change 2.

4. Make appropriate entry on correction page.

DEPARTMENT OF THE NAVY
BUREAU OF SHIPS
WASHINGTON 25, D. C.

IN REPLY REFER TO
Code 993-100
19 April 1954

From: Chief, Bureau of Ships
To: All Activities Concerned with the Installation, Operation and Maintenance of the Subject Equipment

Subj: Instruction Book for Electrical Filter Assembly AN/SRA-12 NAVSHIPS 92206

1. This is the instruction book for the subject equipment and is in effect upon receipt.

2. When superseded by a later edition, this publication shall be destroyed.

3. Extracts from this publication may be made to facilitate the preparation of other Department of Defense Publications.

4. All Navy requests for NAVSHIPS Electronics publications should be directed to the nearest District Publications and Printing Office. When changes or revised books are distributed, notice will be included in the Bureau of Ships Journal and in the Index of Bureau of Ships General and Electronics Publications, NAVSHIPS 250-020.

W. D. LEGGETT, JR.
Chief of Bureau

RECORD OF CORRECTIONS MADE

CHANGE NO.	DATE	SIGNATURE OF OFFICER MAKING CORRECTION

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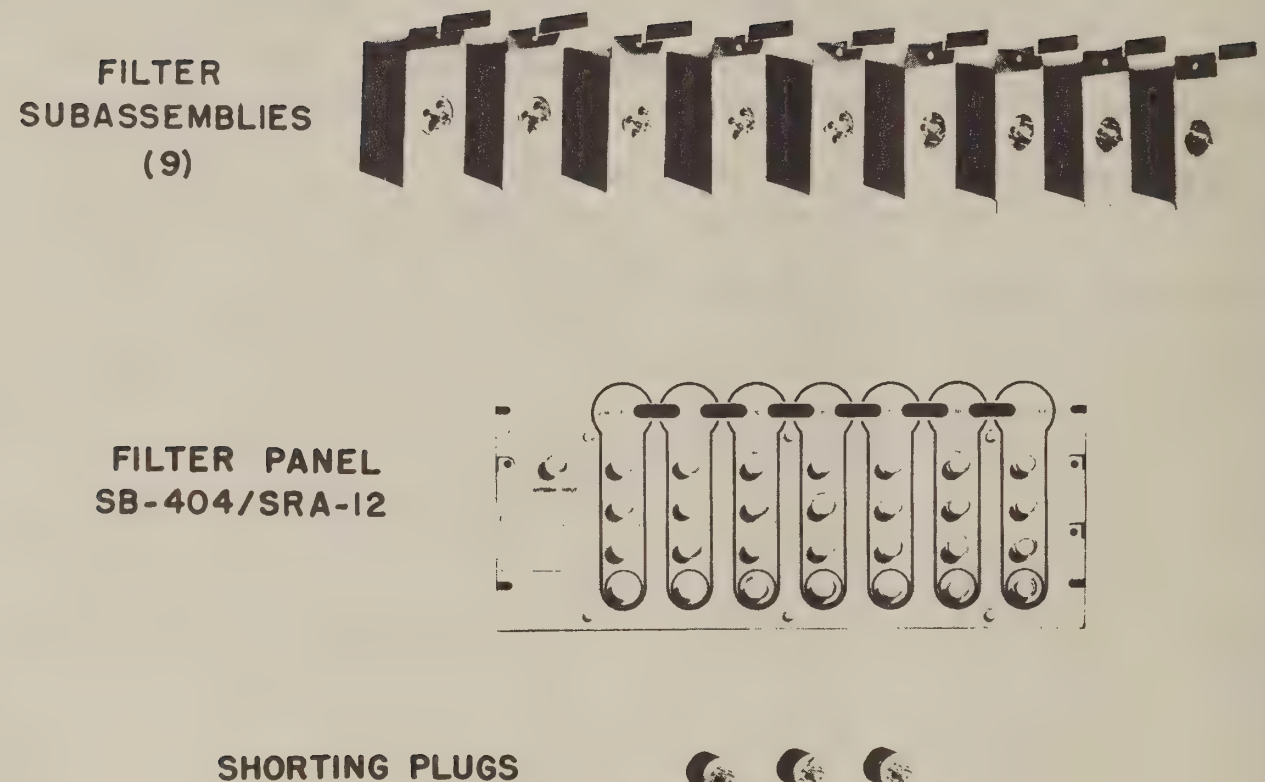


Figure 1-1. Electrical Filter Assembly AN/SRA-12

SECTION 1
GENERAL DESCRIPTION

References and illustrations have been changed throughout the text only to the extent for clarity. All references to Electrical Filter Assembly AN/SRA-12 and Filter Panel SB-404/SRA-12 apply equally to AN/SRA-12A and SB-565/SRA-12A, AN/SRA-12B and SB404A/SRA12 except where otherwise indicated.

1. PURPOSE OF INSTRUCTION BOOK.

This instruction book describes Electrical Filter Assembly AN/SRA-12. Included is a discussion of the theory of operation of the equipment, information on its installation, operation and maintenance, and a parts list.

2. PURPOSE AND BASIC PRINCIPLE OF EQUIPMENT.

(See figure 1-1.)

Electrical Filter Assembly AN/SRA-12 provides, by means of filter subassemblies which plug into Filter Panel SB-404/SRA-12, a maximum of seven r-f bands in the frequency spectrum between 14 kilocycles and 32 megacycles. Connections from the main chassis to an antenna and to receivers are made by coaxial patch cords in a manner similar to that employed with conventional antenna patch panels now in use in the Fleet. Any or all of the seven bands may be used simultaneously with and independently of any of the other bands.

3. DESCRIPTION OF EQUIPMENT.

(See figures 1-1 and 1-2.)

a. GENERAL.—Electrical Filter Assembly AN/SRA-12 comprises Filter Panel SB-404/SRA-12, nine filter subassemblies, and three shorting plugs.

b. FILTER PANEL SB-404/SRA-12.—Filter Panel SB-404/SRA-12 is a rack-mounted equipment with six octal receptacles on its rear face to accommodate any six of the nine filter subassemblies supplied. On the front face of the panel are 28 quick-disconnect coaxial output receptacles and one antenna input coaxial receptacle. These provide, respectively, ready connections to receivers and to an antenna or their associated patch panels.

c. FILTER SUBASSEMBLIES.—Nine filter subassemblies, designed for insertion into the octal sockets on the rear face of Filter Panel SB-404/SRA-12, are provided. Each is an hermetically sealed unit, factory calibrated, consisting essentially of inductors and capacitors. Each is identified by its cross-over frequency and by its standard Navy stock number. Each subassembly is fitted with a four-prong male plug, keyed and mating with a standard female octal socket. Any six of these subassemblies may be used at one time to provide a band of frequencies for reception in the 14 kilocycle-to-32 megacycle range.

d. SHORTING PLUGS.—Three shorting plugs (dummy plug connectors) are provided with the AN/SRA-12 equipment to provide continuity of the signal through the filter assembly in the event as many as three of the filter subassemblies are taken out of the circuit.

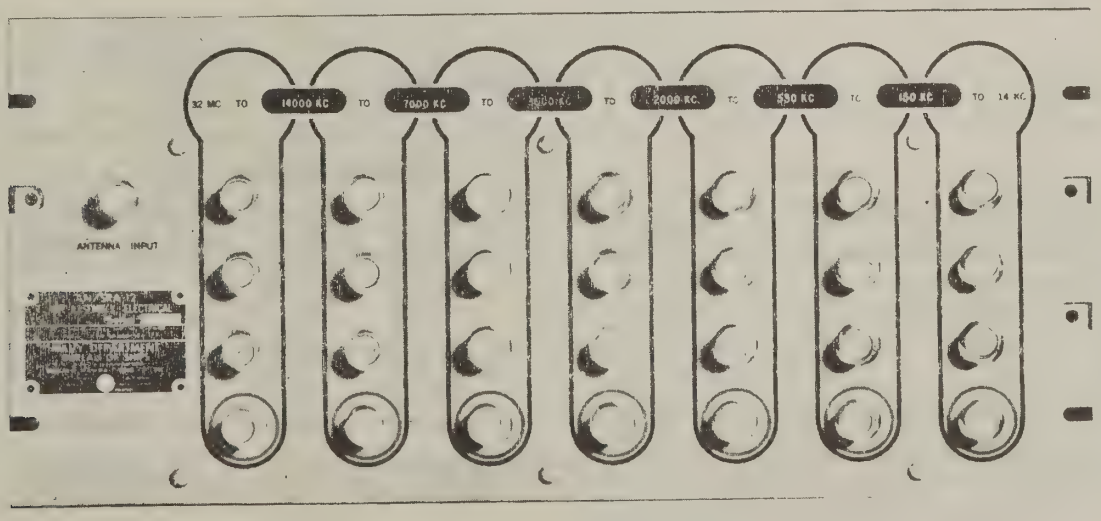


Figure 1-2. Filter Panel SB-404/SRA-12

4. REFERENCE DATA.

a. Nomenclature: Electrical Filter Assembly AN/SRA-12

b. Contracts: NObsr 75181, 75558, 75690

c. Contractor: Lieco Inc., Freeport, N. Y.

d. Cognized Naval Inspector. INSMAT, Garden City, N. Y.

e. Number of packages per complete shipment: One

f. Total cubic contents: 3.00 cu. ft.

g. Total Weight: 75.5 lbs.

h. The frequency spectrum covered by the nine filter subassemblies of Electrical Filter Assembly AN/SRA-12 extends from 14 kilocycles to 32 megacycles. Within this spectrum, a maximum of seven bands of frequencies can be provided by employing combinations of six different filter subassemblies. The cross-over frequencies of the various filter subassemblies are as follows: 50, 150, 300, 530, 1500, 2000, 3500, 7000 and 14,000 kilocycles.

i. To keep losses at a minimum, the input and output of Electrical Filter Assembly AN/SRA-12 should be terminated in 180 ohms, the characteristic impedance of each filter subassembly. Only a slight reflection loss results, however, when the input is terminated in 52 ohms, the nominal impedance of the coaxial cable patching to the receiver inputs.

j. The equipment supplied with Electrical Filter Assembly AN/SRA-12 is listed in table 1-1, EQUIPMENT SUPPLIED.

k. No additional accessories are necessary for the use of Electrical Filter Assembly AN/SRA-12.

l. Shipping data on Electrical Filter Assembly AN/SRA-12 are given in tables 1-1 and 1-2.

TABLE 1-1. EQUIPMENT SUPPLIED

QUANTITY PER EQUIPMENT	NAME OF UNIT	NAVY TYPE DESIGNATION	OVERALL DIMENSIONS			VOLUME	WEIGHT
			HEIGHT	WIDTH	DEPTH		
1	Panel, Filter	SB-404/SRA-12	8-3/4	19	2-1/8	0.2	10¼
9	Filter Subassemblies	(SNSN)	4	2-1/16	3-7/16	0.01	2
3	Shorting Plugs	(SNSN)	1-25/32	1-1/4 (dia)	—	—	0.1
29	Connector, Plug	UG-968/U	1-51/64	1 (dia)			0.44
2	Instruction Book	NAVSHIPS 92206	11	8-1/2	1/4		0.2

Unless otherwise stated, dimensions are in inches, volume in cubic feet, and weight in pounds

TABLE 1-2. SHIPPING DATA

SHIPPING BOX NO.	CONTENTS		OVER-ALL DIMENSIONS				
	NAME	DESIGNATION	HEIGHT	WIDTH	DEPTH	VOLUME	WEIGHT
1	Filter Assembly, Electrical	AN/SRA-12	18	23	12-¾	3.0	75.5

Unless otherwise stated, dimensions are in inches, volume in cubic feet, and weight in pounds

SECTION 2
THEORY OF OPERATION

1. GENERAL.

Electrical Filter Assembly AN/SRA-12 separates the frequency spectrum between 14 kilocycles and 32 megacycles into as many as seven r-f bands. The separation is accomplished by means of combinations of filter subassemblies. Any six of the nine filter subassemblies may be used at one time. Each filter subassembly comprises a low-pass filter and a high-pass filter. The common cross-over frequency between the two filters marks the division between bands.

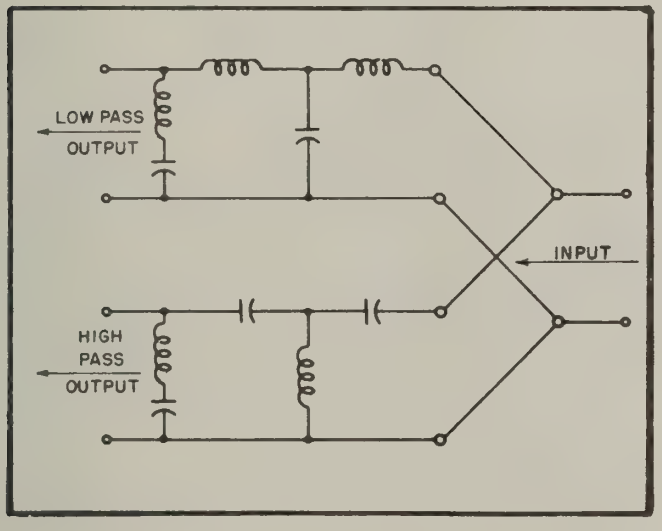


Figure 2-1. Filter Subassembly, Schematic Diagram

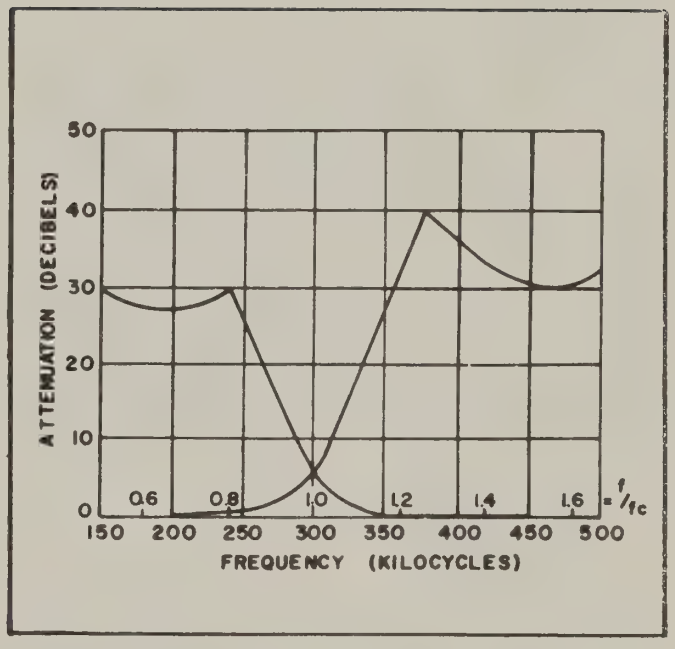


Figure 2-2. Filter Subassembly, Typical Attenuation Characteristics

2. FILTER SUBASSEMBLIES.

(See figure 2-1.)

a. In each of the filter subassemblies the low-pass filter network and the high-pass filter network are arranged to complement each other. Each filter subassembly consists of a ladder network formed by the tandem connection of prototype and derived sections or half-sections which have common cutoff frequencies, and image impedances which match each other at the points of interconnection. Terminations at the output terminals are so employed to permit each network to serve as the shunt arm of the associated network.

b. Each filter subassembly is designed with a characteristic impedance of 180 ohms. It is desirable, there-

fore to minimize losses, to terminate the input and output terminals of Electrical Filter Assembly AN/SRA-12 in an impedance of 180 ohms. This is accomplished by terminating each of the receptacles in the bottom row marked in red into a 180-ohm resistor. This resistor is automatically disconnected when a plug is inserted into any of these seven receptacles. When this is done, the terminating impedance of the connection becomes that of the combined r-f cable and the input circuit of the receiver connected to that particular receptacle. Although the characteristic impedance is mismatched when the bottom receptacle of any row is in use, the disadvantage of the slight reflection losses (of the order of one decibel) is more than compensated for by permitting the construction of inductors and capacitors of practical size.

c. The attenuation characteristics of a typical filter subassembly (for example a 300-kc filter subassembly) are shown in figure 2-2. These characteristics demonstrate the complementary nature of the two filter networks wherein the "pass band" of the low-pass network coincides with the "stop band" of the high-pass network. At the cross-over frequency, which corresponds to the common cutoff frequency, the attenuation is usually between 4 and 6 decibels. Even in the narrow bands in the vicinity of these cross-over points, the loss in signal strength is relatively small compared with the loss obtained when using conventional shipboard receiving systems in association with a large number of closely coupled antennas. The signal level appearing at a red-circled receptacle (two filter subassemblies) is shown in figure 2-3. In this illustration, the frequency band is between 7,000 and 14,000 kilocycles.

3. TYPICAL COMBINATION OF FILTER SUBASSEMBLIES.

A typical arrangement of filter subassemblies in Electrical Filter Assembly AN/SRA-12 is shown in figure 2-4. Signals received on an antenna are supplied to the antenna input receptacle J-101. Signals at the lowest frequencies (in this instance from 530 kilocycles to 14 kilocycles) are conducted to the row of output receptacles on the extreme right of the panel (J-126, J-127, J-128, and J-129), passing through the six low-pass filters which are connected in tandem. Signals at frequencies between 530 kilocycles and 1500 kilocycles appear at the next row of receptacles. Similarly, the remainder of the frequency spectrum is divided by the remaining filter subassemblies. Each receptacle at the bottom of each row (enclosed by red circles) is connected to a 180-ohm terminating resistor which is automatically disconnected when a plug is inserted. All the other output receptacles are connected to their respective filter subassemblies through 300-ohm decoupling resistors.

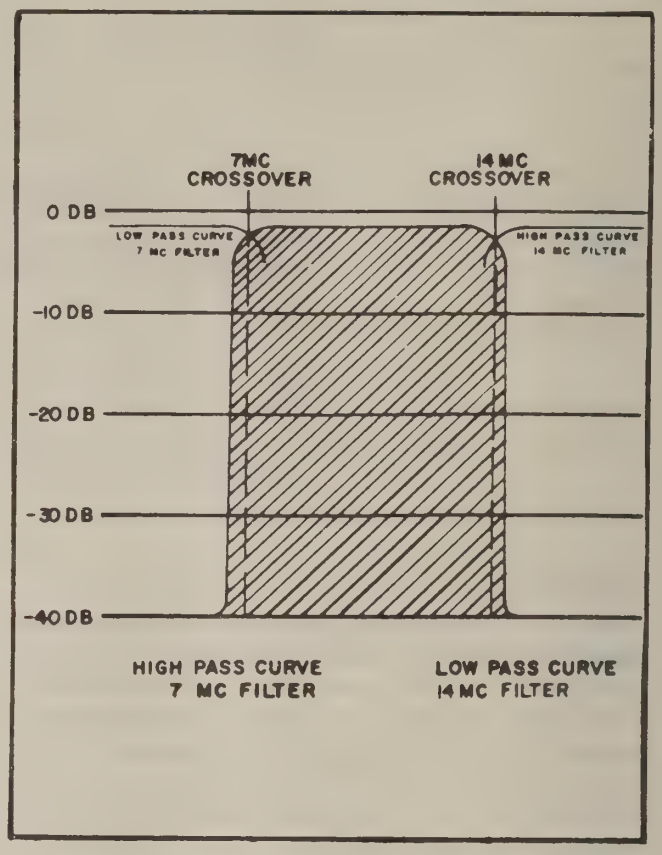


Figure 2-3. Combination of Two Filter Subassemblies, Typical Output at Output Receptacle

4. ISOLATION OF RECEIVERS.

a. The inherent characteristics of the filter subassemblies provide isolation between the several output jacks. The principle is well known by which such filters guard against spurious signals resulting from nonlinearities in the receiving circuit. Some explanation is required, however, of the manner in which these same filters provide isolation from an operational standpoint.

b. Operational isolation of the several receiving circuits is provided by the independence of the input and output impedances of the filter when the filter attenuation is 20 decibels or more. Thus, even though the input impedance of a receiver changes considerably as it is tuned through a band of frequencies, the effect of this tuning upon other receivers connected to adjacent channels will hardly be noticed, except possibly in the immediate vicinity of the cross-over frequencies. Moreover, receivers can be connected to and disconnected from the output receptacles in a given band without producing a noticeable effect upon the strength of signals appearing on other rows of output receptacles.

5. IMPRESSED VOLTAGES.

Electrical Filter Assembly AN/SRA-12 is designed to withstand impressed signals of as much as 50 volts when the equipment is terminated in resistive loads of no greater than 180 ohms. Although the voltage introduced into an open-circuited receiving antenna, which is closely coupled to a high-power transmitting antenna, may be in excess of 100 volts, the upper limit of 50 volts will seldom be exceeded when these antennas are terminated in the moderately low impedances such as are normally encountered aboard ship.

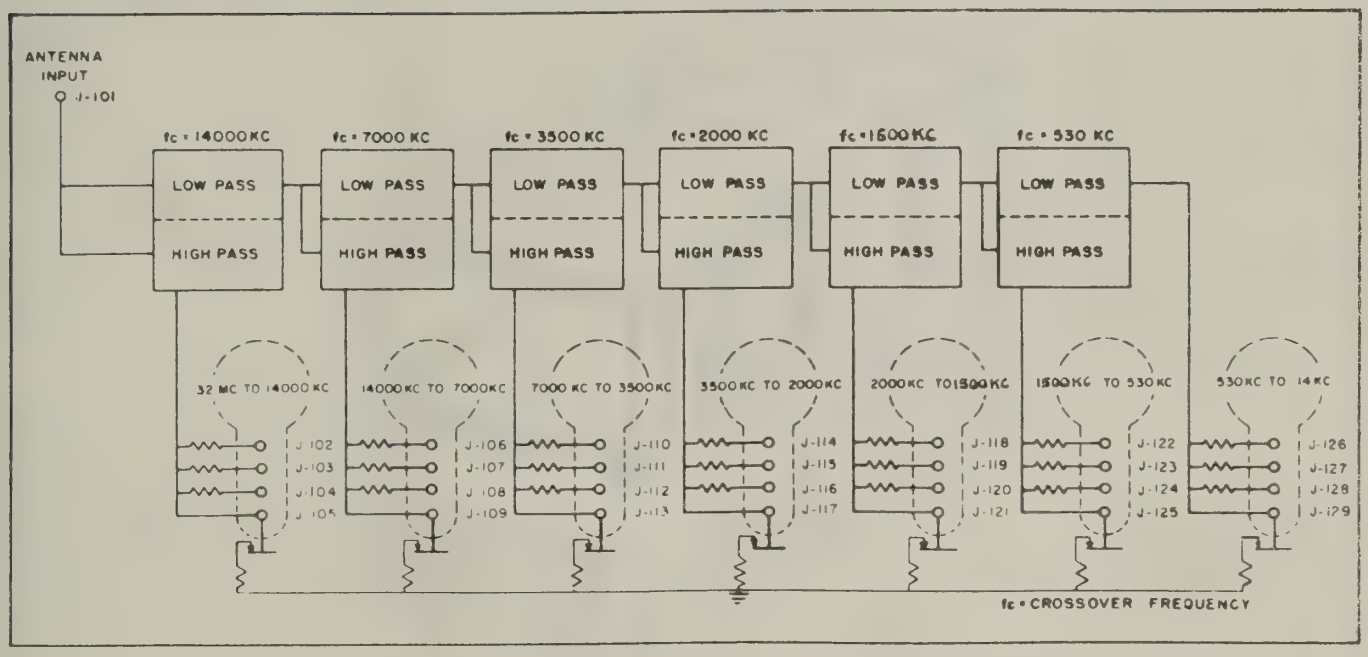


Figure 2-4. Electrical Filter Assembly AN/SRA-12, Block Diagram showing Typical Combination of Filter Subassemblies

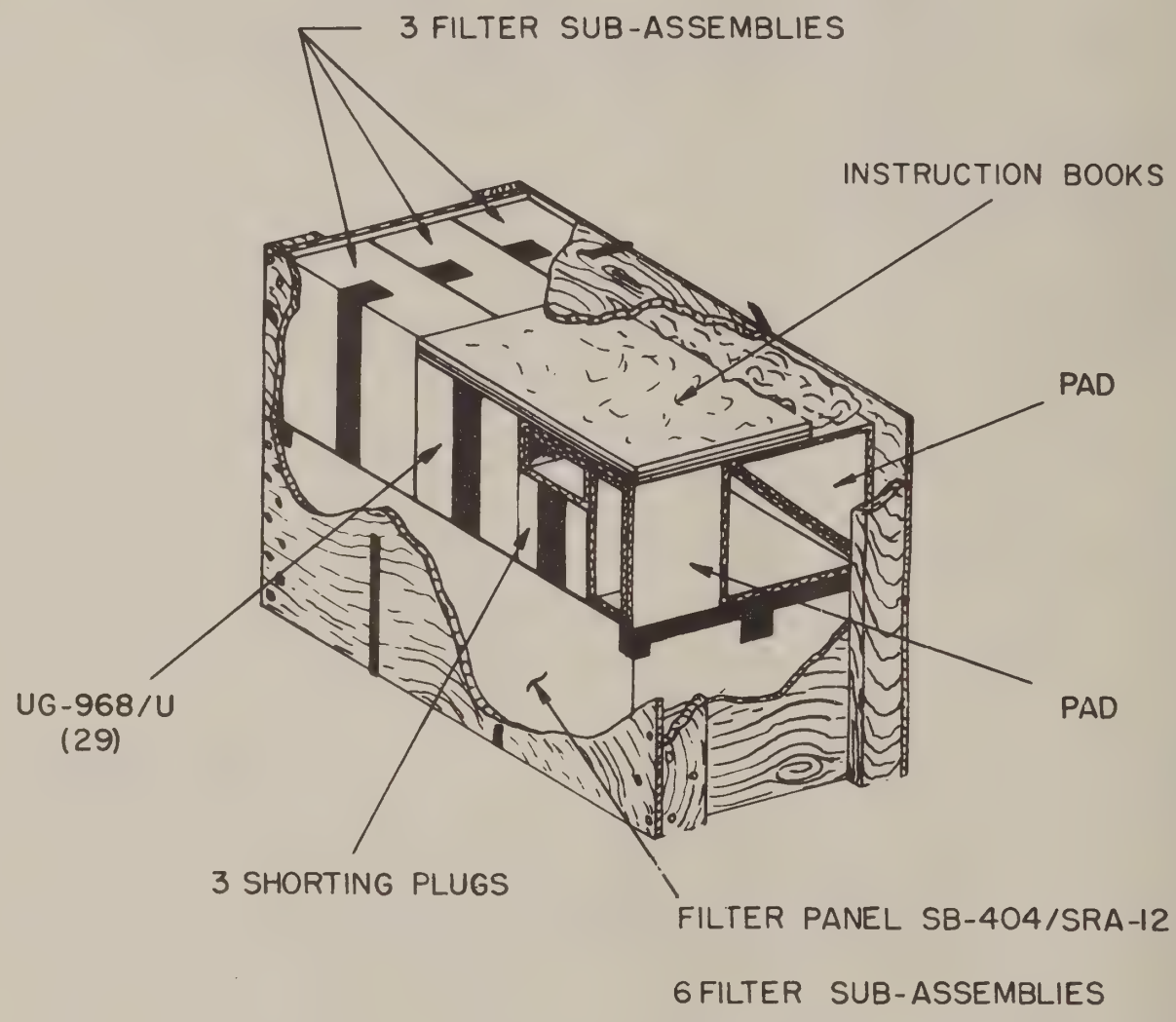


Figure 3-1. Electrical Filter Assembly AN/SRA-12, Unpacking Procedure

SECTION 3
INSTALLATION

1. UNPACKING AND INSPECTING THE EQUIPMENT.

a. METHOD OF PACKAGING. *(See figure 3-1.)*—Electrical Filter Assembly AN/SRA-12 will ordinarily be installed while the ship is in a shipyard. All of the units of the equipment are packaged in 5 cartons and 3 bags, all of which are packed in one wooden container. One of the cartons contains the main chassis with six of the nine filter subassemblies inserted into the chassis. These filter subassemblies have been arbitrarily chosen for shipping purposes only and are not intended as a guide to installation personnel. The three remaining filter subassemblies are individually packaged in cartons. Another carton contains the 29 plugs required for the coaxial patch cabling. The last carton contains the three shorting plugs. The Instruction Books, NAVSHIPS 92206 are contained with the equipment.

b. REMOVING EQUIPMENT FROM PACKAGE.—Normal care is all that is required in removing the components of the Electrical Filter Assembly AN/SRA-12 from its shipping container. As the components are removed from their containers, each item of equipment should be inspected for obvious damage and checked against table 1-1 EQUIPMENT SUPPLIED.

2. INSTALLATION.

a. FILTER SUBASSEMBLY SELECTION.—Before Electrical Filter Assembly AN/SRA-12 is installed in its permanent location aboard ship, the proper combination of filter subassemblies must be selected. The combination selected will depend upon the types of receivers and antennas to be used and the frequency ranges over which operation is desired.

(1) The filter subassemblies are designed to be used with existing communications receivers as well as with new receiving and terminal equipment scheduled for future distribution to the Fleet. Receiver frequency ranges will determine which filter subassembly will be used with any given receiver.

(2) Selection of the proper antenna to be used in conjunction with Electrical Filter Assembly AN/SRA-12 is dependent upon the frequency ranges it is to cover. Short antennas such as whips will likely be used with high-frequency ranges (3.5 to 3.2 mc); long-wire and flat-top antennas will likely be used at medium and low frequencies.

b. FILTER SUBASSEMBLY INSTALLATION. *(See figure 3-2.)* — When the proper filter subassemblies embracing all frequencies over which operation is desired have been selected, they are plugged into

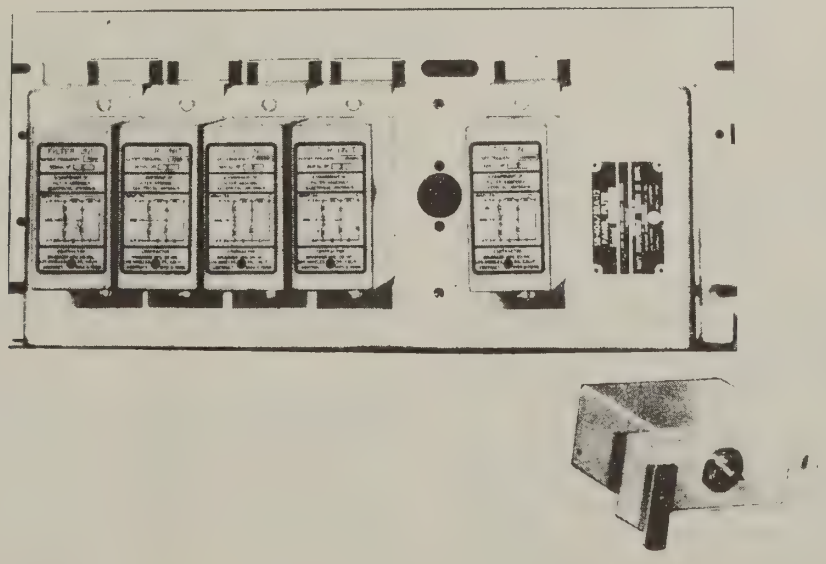


Figure 3-2. Electrical Filter Assembly AN/SRA-12, Rear View with One Filter Subassembly Removed

the octal receptacles on the rear of the main chassis. The filter subassembly with the lowest cutoff frequency in the group is plugged into the receptacle on the extreme left, looking at the *rear* of the main chassis. Those of successively higher cutoff frequency are then plugged in, progressing toward the right. When all six filter subassemblies are in place, the sequence should be checked by looking at the *front* of the chassis. As seen from this position, the frequency labels should progress from the highest on the left to the lowest on the right. *(See figure 1-2.)* After each filter subassembly is in position, each is to be secured to the panel by means of the machine screws through its top and bottom mounting flanges. In case any filter subassembly is not used in a particular installation, a shorting plug (dummy plug connector) must be inserted in the octal receptacle into which the filter subassembly would normally be placed.

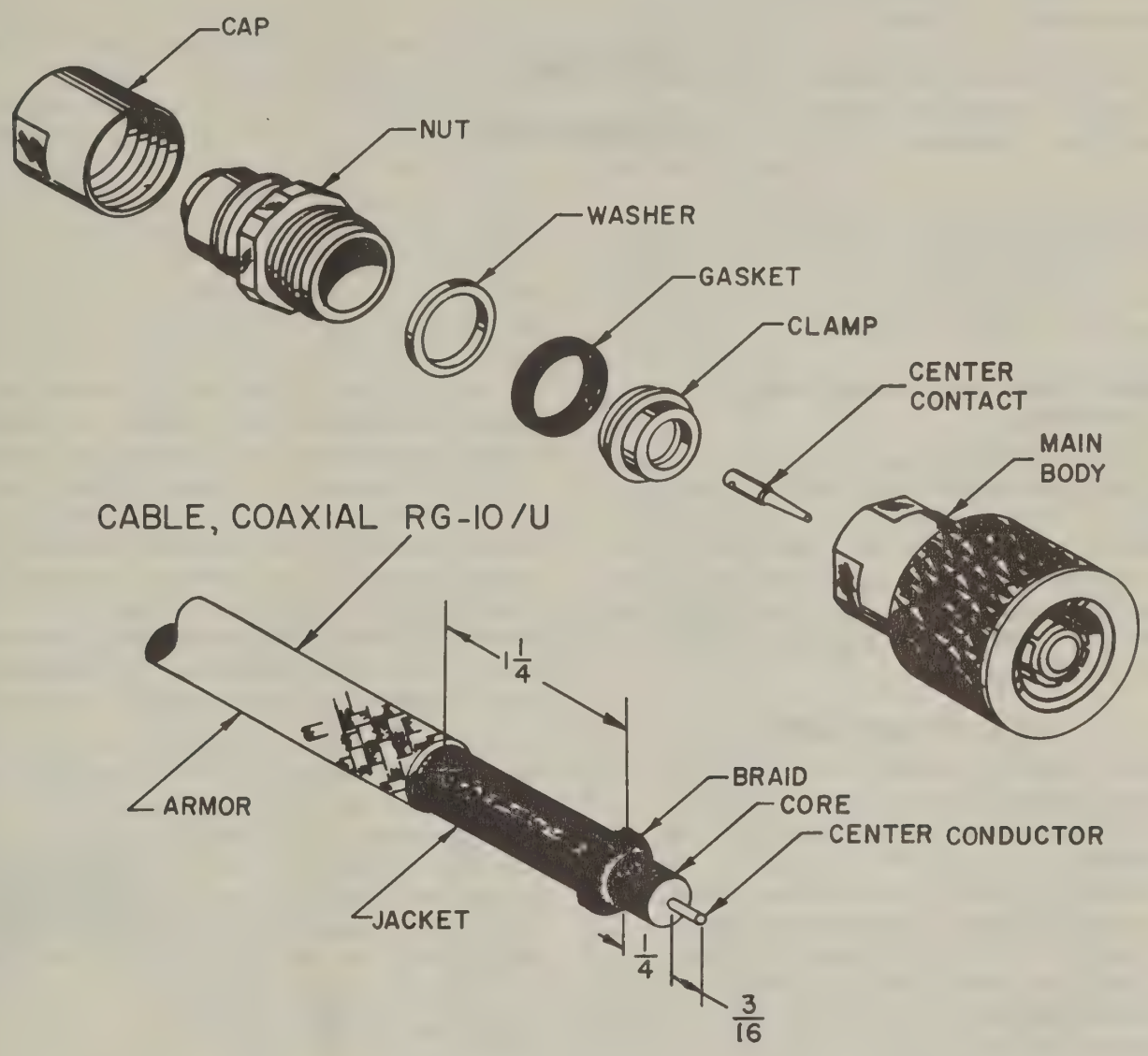
c. INSTALLATION OF THE COMPLETE UNIT.—With the filter subassemblies in place, Filter Panel SB-404/SRA-12 is installed in a standard 19-inch relay rack. The entire assembly may be rack-mounted by four machine screws with the front panel in place, or by removing the front panel and mounting the main chassis in the relay rack, and adding the front panel with four additional machine screws. The latter method is preferred as the front panel may thus be removed without removing the entire unit.

CAUTION

Do not rely for support only upon the four-terminal plugs on the filter subassemblies. Make certain the machine screws are secured tightly before Filter Panel SB-404/SRA-12 is installed in its rack mounting.

d. INSTALLATION OF CONNECTOR UG-968/U.—All receptacles on Filter Panel SB-404/SRA-12 mate with UG-968/U quick-disconnect connectors. These connectors (supplied with the equipment) must be installed on the patch cords used to interconnect Filter Panel SB-404/SRA-12 and receiver and antenna patch panels. Refer to figure 3-3 for the recommended method of preparing these patch cords.

NOTE:
All receptacles on Filter Panel SB-404A/SRA-12 mate with the UG-968B/U as well as the UG-968/U quick-disconnect connectors, although the UG-968B/U quick-disconnect connector *cannot* be mated with the receptacles on the Filter Panel SB-404/SRA-12 nor the Filter Panel SB-565/SRA-12.



(A) Square off the end of the RG-10/U cable. Slide cap on over the cable.

(B) Cut off armor 1¼ inches from end of the cable. Cut off jacket ¼ inch from end of cable. Slide the nut, washer, gasket, and clamp over the cable. Do not damage wire braid.

(C) Cut off polyethelene core 3/16 inch from end of cable pushing back on the braid and taking care not to cut the braid and inner conductor.

(D) Comb out the braid. Fold the braid back over the clamp, trimming off the excess. Soft-solder the contact pin to the inner conductor making sure that the core is flush with the contact pin. The pin must be kept clean of solder.

(E) Insert the center contact into the body of the plug as far as it will go. Seat the clamp, gasket, and washer and tighten the nut with a wrench.

(F) Tighten the cap to the nut with a wrench, making certain that the armor is fully enclosed. Check also to make sure the contact pin is approximately 1/16 inch below the flush surface of the plug.

Figure 3-3. Installation of Connector, Plug UG-968/U

SECTION 4
OPERATION

1. CONNECTING THE ANTENNA AND RECEIVERS.

a. PATCH CORDS.—Connections between an antenna patch panel and Electrical Filter Assembly AN/SRA-12 and between the Electrical Filter Assembly AN/SRA-12 and a receiver patch panel are made by coaxial patch cords terminated in UG-968/U connectors. This procedure is similar to that now in use in the Fleet for interconnection of receivers and antennas. See Note on page 3-2.

NOTICE TO OPERATORS

The UG-968/U connector is of the quick-disconnect type equipped with a locking ring. This locking ring must be pulled back and held while the connector is inserted into the selected receptacle. Once connection is made, the locking ring should be pushed forward (it is spring loaded) to ensure positive locking. To disconnect the connector, pull back on the locking ring before withdrawing the connector from the receptacle.

b. OUTPUT JACK SELECTION. *(See figure 4-1.)*—

(1) The red-circled receptacles at the bottom of each row on Filter Panel SB-404/SRA-12 are directly connected to their respective filter subassemblies. These receptacles should be used whenever maximum signal strength is desired. The remaining receptacles in any given row are connected to their respective filter subassemblies through 300-ohm decoupling resistors. These latter receptacles are to be used whenever relatively strong signals are present, or whenever signals of relatively minor importance are being received. Ideally, only one receiver should be connected to a given channel, through the red-circled receptacle. Under such ideal conditions, only seven receivers would be used with a given antenna and Electrical Filter Assembly AN/SRA-12. At frequencies somewhat removed from the cross-over points of the several channels, the performance of these receivers would be comparable to the performance which would be obtained if each receiver were connected to a separate antenna. Connecting 21 additional receivers to the remaining (decoupled) output positions would not materially affect the performance of the original seven receivers directly connected. Moreover, the performance of all the receivers would still be superior to the performance of even as few as three or four receivers connected to a given antenna through a conventional patch panel.

(2) Unique conditions aboard ship might cause the signal level at a given row of receptacles to be slightly higher or lower than the signal level at other rows. The reason is that different combinations of the filter subassemblies act like different lengths of transmission line. Depending upon the position of the resulting voltage loops and nodes, the signal level might differ slightly from one row of receptacles to another.

2. CHANNEL SELECTION.

a. CHOOSING PROPER CHANNEL.—Navy communication receivers generally operate throughout frequency bands which exceed the width of the channels normally provided by Electrical Filter Assembly AN/SRA-12. For this reason, when tuning a receiver beyond the range of any one channel it is necessary to transfer the *antenna patch cord of the receiver* from one row of receptacles to another row which provides the desired signals. For example, when using a Model RBC receiver to receive signals in the 7,000-to-14,000 kilocycle band, the antenna patch cord of the receiver is plugged into the 7,000-to-14,000 kilocycle channel of Electrical Filter Assembly AN/SRA-12. Should this same receiver be retuned to the 14,000-to-32,000 kilocycle band, the antenna patch cord would have to be changed to the 14,000-to-32,000 kilocycle channel on Electrical Filter Assembly AN/SRA-12.

b. REVISING SEQUENCE OF CHANNELS.—After Electrical Filter Assembly AN/SRA-12 has been placed in service, the frequencies available at given rows of receptacles may be changed to meet operating conditions. (For initial installation of filter subassemblies, refer to paragraph 2, Section 3). The changes are accomplished by employing different combinations of filter subassemblies corresponding to the desired frequency ranges. In some instances, where the rear of the main chassis is inaccessible from the back of the relay rack, the entire unit will have to be removed from the rack mounting before filter subassemblies may be changed. In revising the sequence of channels, care must be taken to make sure that, frequency-wise, the lowest channel is on the right and the highest on the left as seen from the *front* of Filter Panel SB-404/SRA-12. Use of the shorting plugs (dummy plug connectors) provides continuity between successive filter subassemblies when any are removed for whatever reason, without the necessity for changing the position of the remaining filter subassemblies. Note, however, that using a shorting plug eliminates the row of jacks to the left of the removed filter subassembly, easily discernable to the operator.

c. USE OF ELECTRICAL FILTER ASSEMBLY AN/SRA-12 WITH FUTURE EQUIPMENTS.—Operation of Electrical Filter Assembly AN/SRA-12 with future receiving equipments will be identical with its operation as described in this Section for equipments currently in use.

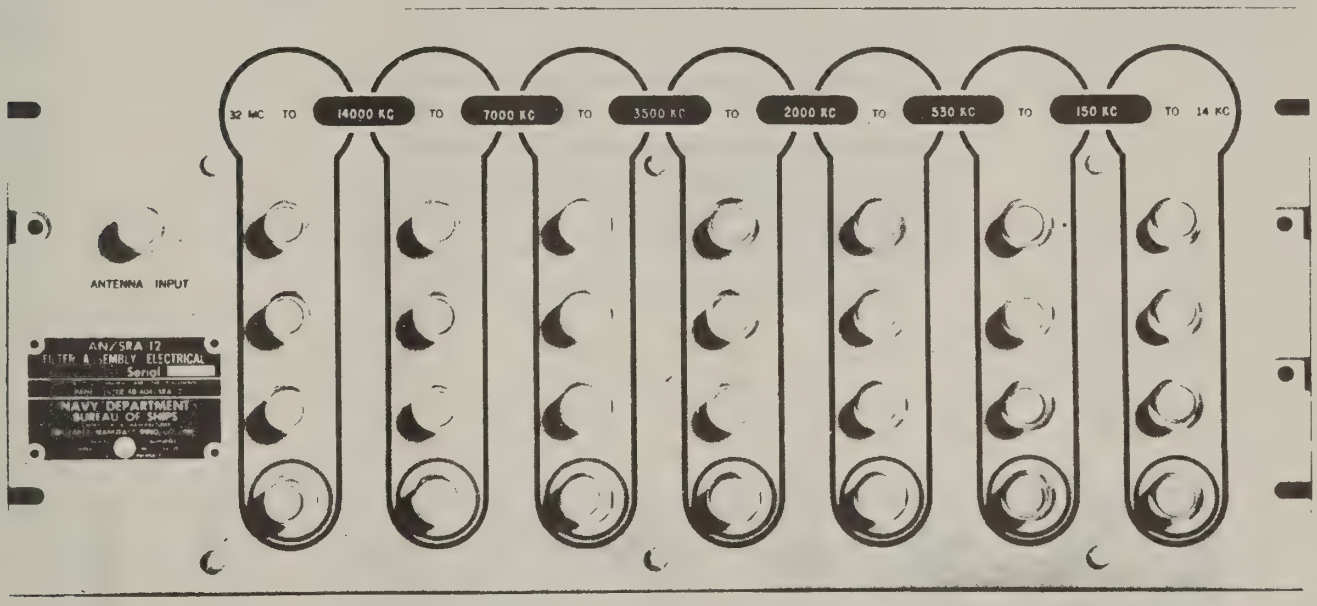


Figure 4-1. Electrical Filter Assembly AN/SRA-12 (Filter Panel SB-404/SRA-12), Front View

SECTION 5

OPERATOR'S MAINTENANCE

1. ROUTINE CHECKING.

Electrical Filter Assembly AN/SRA-12 should be inspected periodically and all external parts (connectors, receptacles, panel surfaces, and patch cords) kept free of dust, lint, or corrosion. In the event faulty performance is observed, refer to Section 7, Corrective Maintenance, of this Instruction Book for steps necessary to restore satisfactory operation.

NOTICE TO OPERATORS

When a filter subassembly is removed it is necessary to insert a shorting plug (dummy plug connector) in its place to maintain continuity to the remaining filter subassemblies. Operators are cautioned to check for the absence of a filter subassembly which would render the row of receptacles to the left of the removed subassembly inoperative.

SECTION 6

PREVENTIVE MAINTENANCE

1. SERVICING.

Electrical Filter Assembly AN/SRA-12 should be inspected periodically for loose or corroded connections. All sockets, plugs, receptacles and patch cords should be kept clean of dust, dirt, lint, and corrosion. Access to the various compartments on the main chassis is obtained by removing the front panel. Each individual receptacle strip may be removed from the chassis and turned over to obtain access to the decoupling resistors and terminals on its underside. *(See figure 6-1.)*

2. ROUTINE TESTING OF FILTER SUBASSEMBLIES.

a. If all of the filter subassemblies have been correctly selected and correctly installed, and if all connections are secure, defective filter subassemblies will be indicated by an absence of signals or by weak signals at any given row of output receptacles associated with that particular subassembly. If these conditions are noted, the filter subassembly connected to the particular row of receptacles is to be replaced either by a spare filter subassembly or a dummy plug connector. (Refer to paragraph 2, Section 3 of this Instruction Book.) In this substitution test, a filter subassembly having the same cross-over frequency as the suspected one should be used.

Note

Before a filter subassembly can be removed from the chassis, the machine screws which secure the filter subassembly through its top and bottom mounting flanges must be removed.

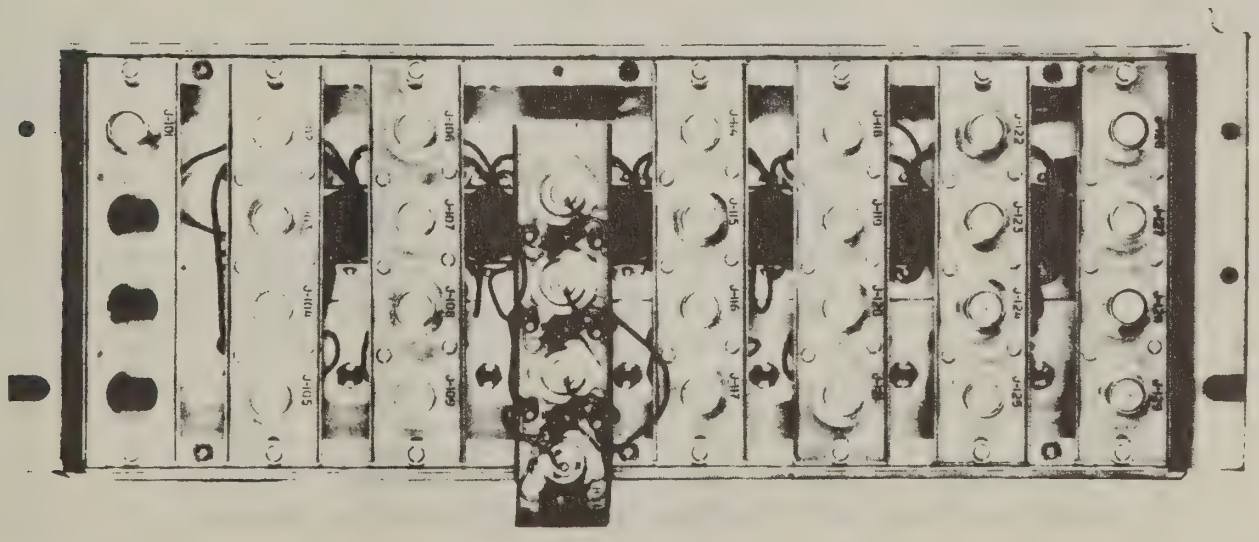


Figure 6-1. Filter Panel SB-404/SRA-12, Front Panel Removed

FAILURE REPORTS

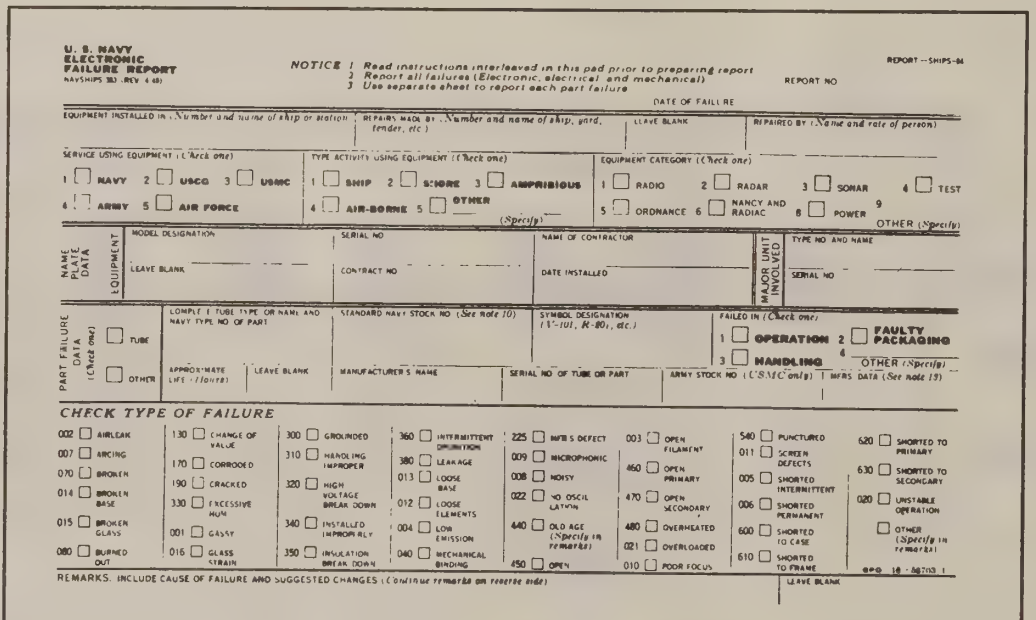
A FAILURE REPORT must be filled out for the failure of any part of the equipment whether caused by defective or worn parts, improper operation, or external influences. It should be made on Failure Report, form NAVGEN 1025, which has been designed to simplify this requirement. The card must be filled out and forwarded to BUSHIPS in the franked envelope which is provided. Full instructions are to be found on each card.

Use great care in filling the card out to make certain it carries adequate information. For example, under "Circuit Symbol" use the proper circuit identification taken from the schematic drawings, such as T-101 in the case of a transformer, or R-125, for a resistor. Do not substitute brevity for clarity. Use the back of the card to completely describe the cause of failure and attach an extra piece of paper if necessary.

The purpose of this report is to inform BUSHIPS of the cause and rate of failures. The information is used by the Bureau in the design of future equipment and in the maintenance of adequate supplies to keep the present equipment going. The cards you send in, together with those from hundreds of other ships, furnish a store of information permitting the Bureau to keep in touch with the performance of the equipment of your ship and all other ships of the Navy.

This report is not a requisition. You must request the replacement of parts through your Officer-in-Charge in the usual manner.

Make certain you have a supply of Failure Report cards and envelopes on board. They may be obtained from the nearest District Printing and Publication Office.


U. S. NAVY
ELECTRONIC
FAILURE REPORT
NAVSHIPS 383 (REV. 4-60)

NOTICE 1 Read instructions interleaved in this pad prior to preparing report
2 Report all failures (Electronic, electrical and mechanical)
3 Use separate sheet to report each part failure

REPORT NO

REPORT—SHIPS-84

DATE OF FAILURE

EQUIPMENT INSTALLED IN (Number and name of ship or station)

REPAIRS MADE BY (Number and name of ship, yard, tender, etc.)

LEAVE BLANK

REPAIRED BY (Name and rate of person)

SERVICE USING EQUIPMENT (Check one)
1 ☐ NAVY 2 ☐ USCG 3 ☐ USMC
4 ☐ ARMY 5 ☐ AIR FORCE

TYPE ACTIVITY USING EQUIPMENT (Check one)
1 ☐ SHIP 2 ☐ SHORE 3 ☐ AMPHIBIOUS
4 ☐ AIR-BORNE 5 ☐ OTHER (Specify)

EQUIPMENT CATEGORY (Check one)
1 ☐ RADIO 2 ☐ RADAR 3 ☐ SONAR 4 ☐ TEST
5 ☐ ORDNANCE 6 ☐ NANCY AND RADIAC 8 ☐ POWER 9 OTHER (Specify)

NAME PLATE DATA EQUIPMENT
MODEL DESIGNATION
LEAVE BLANK
SERIAL NO
CONTRACT NO
NAME OF CONTRACTOR
DATE INSTALLED
MAJOR UNIT INVOLVED
TYPE NO AND NAME
SERIAL NO

PART FAILURE DATA (Check one)
☐ TUBE ☐ OTHER
COMPLETE TUBE TYPE OR NAME AND NAVY TYPE NO OF PART
STANDARD NAVY STOCK NO (See note 10)
SYMBOL DESIGNATION (V-101, R-80, etc.)
FAILED IN (Check one)
1 ☐ OPERATION 2 ☐ FAULTY PACKAGING
3 ☐ HANDLING 4 ☐ OTHER (Specify)
APPROXIMATE LIFE (Hours)
LEAVE BLANK
MANUFACTURER'S NAME
SERIAL NO OF TUBE OR PART
ARMY STOCK NO (USMC only)
MFRS DATA (See note 13)

CHECK TYPE OF FAILURE

002 ☐ AIRLEAK
007 ☐ ARCING
070 ☐ BROKEN
014 ☐ BROKEN BASE
015 ☐ BROKEN GLASS
080 ☐ BURNED OUT
130 ☐ CHANGE OF VALUE
170 ☐ CORRODED
190 ☐ CRACKED
330 ☐ EXCESSIVE HUM
001 ☐ GASSY
016 ☐ GLASS STRAIN
300 ☐ GROUNDED
310 ☐ HANDLING IMPROPER
320 ☐ HIGH VOLTAGE BREAK DOWN
340 ☐ INSTALLED IMPROPERLY
350 ☐ INSULATION BREAK DOWN
360 ☐ INTERMITTENT OPERATION
380 ☐ LEAKAGE
013 ☐ LOOSE BASE
012 ☐ LOOSE ELEMENTS
004 ☐ LOW EMISSION
040 ☐ MECHANICAL BINDING
225 ☐ MFR'S DEFECT
009 ☐ MICROPHONIC
008 ☐ NOISY
022 ☐ NO OSCILLATION
440 ☐ OLD AGE (Specify in remarks)
450 ☐ OPEN
003 ☐ OPEN FILAMENT
460 ☐ OPEN PRIMARY
470 ☐ OPEN SECONDARY
480 ☐ OVERHEATED
021 ☐ OVERLOADED
010 ☐ POOR FOCUS
540 ☐ PUNCTURED
011 ☐ SCREEN DEFECTS
005 ☐ SHORTED INTERMITTENT
006 ☐ SHORTED PERMANENT
600 ☐ SHORTED TO CASE
610 ☐ SHORTED TO FRAME
620 ☐ SHORTED TO PRIMARY
630 ☐ SHORTED TO SECONDARY
020 ☐ UNSTABLE OPERATION
☐ OTHER (Specify in remarks)

REMARKS. INCLUDE CAUSE OF FAILURE AND SUGGESTED CHANGES (Continue remarks on reverse side)

LEAVE BLANK

GPO 16 - 86703 1

Figure 7-1. Failure Report, Sample Form

SECTION 7
CORRECTIVE MAINTENANCE

1. GENERAL.

Visual inspection and normal trouble-shooting procedures will localize any defective wiring, resistors, receptacles, or loose or corroded connections in Filter Panel SB-404/SRA-12. *(Refer to figures 7-2 and 7-3.)* Defective parts should be cleaned or replaced and poor connections made secure.

2. SERVICING.

a. Faulty performance of filter subassemblies may be localized by performing the check outlined in paragraph 2, Section 6, Preventive Maintenance of this Instruction Book. Any suspected filter subassembly should be removed and replaced. Since all of these units are factory-sealed, no internal maintenance is required or possible. Repair of filter subassemblies should not be attempted; any that are indicated as being defective should be replaced.

b. TEST PROCEDURE. The test procedure which follows is intended as a final check on the performance of any filter subassembly suspected of being defective. The test consists of supplying a signal of the proper frequency to the antenna input receptacle and of detecting the signal with a receiver at the output receptacle. A list of test equipment is contained in Table 7-1.

c. DETAILED TEST PROCEDURE.

(1) Adjust the signal generator (AN/URM-25B or equivalent) *to provide a frequency midway between the cross-over frequency of two successive filter subassemblies.* (For example, if one filter subassembly has a cross-over frequency of 14,000 kilocycles and the succeeding filter subassembly has a cross-over frequency of 7,000 kilocycles, the signal generator would be set to provide a frequency of approximately 10,500 kilocycles.)

(2) Adjust the amplitude of the output of the signal generator to a level between 25 and 50 microvolts.

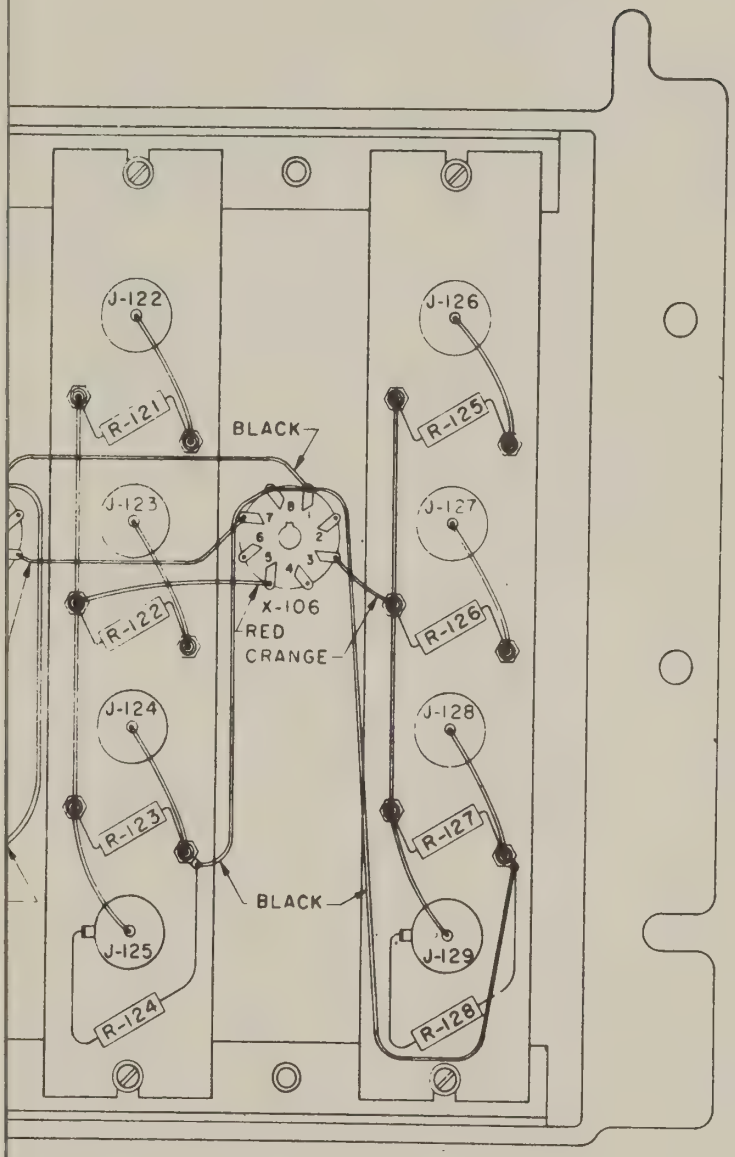
(3) Connect the receiver (properly tuned to the signal frequency of the signal generator) to the red-circled receptacle. Observe the signal level.

(4) Connect the receiver directly to the signal generator. Observe the signal level. The levels of paragraph 2*b* (3) and 2*b* (4) should be comparable. If such is not the case, the filter subassembly associated with this frequency range should be replaced with a spare or a shorting plug (dummy plug connector).

(5) Repeat the steps of paragraph 2*c* (1) through 2*c* (4) in sequence for each filter subassembly progressing from the highest frequency to the lowest (left to right) adjusting the signal-generator output frequency and amplitude accordingly.

TABLE 7-1. LIST OF TEST EQUIPMENT REQUIRED

NAME OF UNIT	DESIGNATION	REQUIRED USE	REQUIRED CHARACTERISTICS
RF Signal Generator Set	AN/URM-25B	Filter test	Generation of signals (CW or AM) in the 10 kc-to-50 mc frequency band and over wide range of output voltage; impedance 53.5 ohms or 500 ohms at output; r-f attenuator.



Panel SB-404/SRA-12, Practical Wiring Diagram

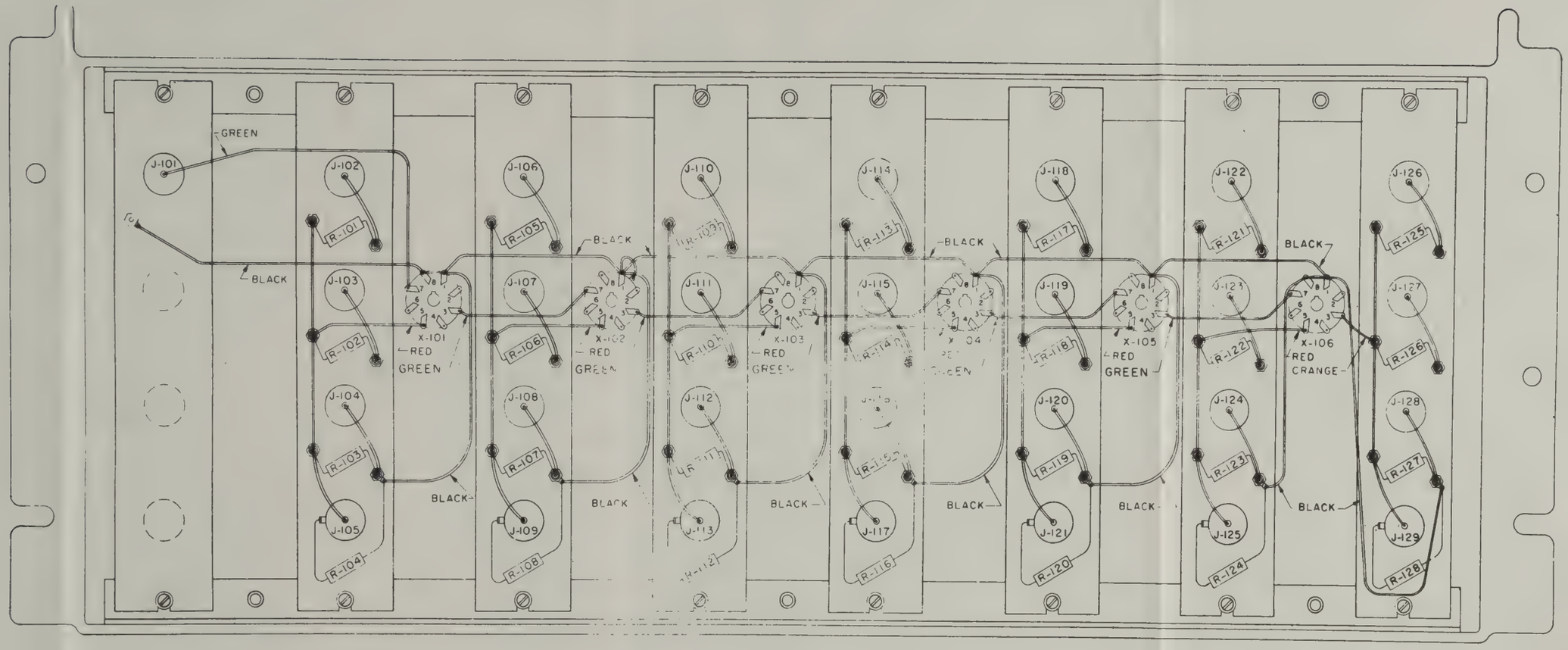


Figure 7-2. Filter Panel SB-404/SRA-12, Practical Wiring Diagram

0967-065-3011
Formerly 0280-282-7003

NAVSHIPS 92206

TECHNICAL MANUAL

for

ELECTRICAL FILTER ASSEMBLY AN/SRA-12 AN/SRA-12A AN/SRA-12B & AN/SRA-12C

Manufactured By

LIECO INC.
SYOSSET, N. Y.

GENERAL MAGNETICS INC.
MINNEAPOLIS, MINN.

DEPARTMENT OF THE NAVY

BUREAU OF SHIPS

CONTRACT: *NObsr* 75181
NObsr 75558
NObsr 75690
NObsr 81558

Approved by BuShips: 19 *April* 1954

Change Number Four: 25 *September* 1961

0967-065-3011
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LIST OF EFFECTIVE PAGES

PAGE NUMBERS	CHANGE IN EFFECT	PAGE NUMBERS	CHANGE IN EFFECT
Title Page	Change 3	5-0	Original
A	Change 4	6-1	Original
B to C	Original	7-0 to 7-2	Original
i, ii, iii	Original	7-3 to 7-4	Original
1-0	Original	7-5 to 7-6	Change 1
1-1	Change 3	8-0A	Change 4
1-2	Change 4	8-0B	Change 3
2-1 to 2-3	Original	8-1 to 8-6	Original
3-0 to 3-1	Original	8-7	Change 4
3-2	Change 3	i-0 to i-2	Original
4-0	Change 3		
4-1	Original		

The parts list section has been corrected by means of the following supplementary table. Always refer to the appropriate supplementary table for a given item first as it completely supersedes any corresponding listing in the basic table. If no information is shown for a given item, then refer to the basic table for the required information.

NOTE

"The stock numbers and support information that appear in this section have been revised. For Federal Stock Numbers and Source, Maintenance and Recoverability Codes refer to the Appropriate Stock Number Identification Table (SNIT) issued by the Electronics Supply Office. The SNIT rather than this publication, shall govern if there is any conflict between stock numbers and support information."

TABLE 8-4A. TABLE OF REPLACEABLE PARTS

REFERENCE DESIGNATION	FEDERAL STOCK NUMBER	NAME AND DESCRIPTION	LOCATING FUNCTION
101-199		ELECTRICAL FILTER ASSEMBLY, AN/SRA-12A, -12C	
J-101		CONNECTOR, RECEPTACLE, ELECTRICAL; UG-1319/U	Antenna Input Receptacle
J-102		Same as J-101	Output Receptacle
J-103		Same as J-101	Output Receptacle
J-104		Same as J-101	Output Receptacle
J-105		CONNECTOR, RECEPTACLE, ELECTRICAL; same as J-101 except for: Switching feature which provides automatic connection of externally mounted terminating resistor when associated connector plug is removed for automatic disconnection of terminating resistor when plug is inserted. TRU PART: NO. 862, UG-1318/U	Output Receptacle
J-106		Same as J-101	Output Receptacle
J-107		Same as J-101	Output Receptacle
J-108		Same as J-101	Output Receptacle
J-109		Same as J-105	Output Receptacle
J-110		Same as J-101	Output Receptacle
J-111		Same as J-101	Output Receptacle
J-112		Same as J-101	Output Receptacle
J-113		Same as J-105	Output Receptacle
J-114		Same as J-101	Output Receptacle
J-115		Same as J-101	Output Receptacle
J-116		Same as J-101	Output Receptacle
J-117		Same as J-105	Output Receptacle
J-118		Same as J-101	Output Receptacle
J-119		Same as J-101	Output Receptacle
J-120		Same as J-101	Output Receptacle
J-121		Same as J-105	Output Receptacle
J-122		Same as J-101	Output Receptacle
J-123		Same as J-101	Output Receptacle
J-124		Same as J-101	Output Receptacle
J-125		Same as J-105	Output Receptacle
J-126		Same as J-101	Output Receptacle
J-127		Same as J-101	Output Receptacle
J-128		Same as J-101	Output Receptacle
J-129		Same as J-105	Output Receptacle

REFERENCE DESIGNATION	STOCK NUMBERS STANDARD NAVY SIGNAL CORPS AIR FORCE	NAME AND DESCRIPTION	LOCATING FUNCTION
P-101		PLUG, CONNECTOR: UG 968B/U	Receiver connector
P-102		Same as P-101	Receiver connector
P-103		Same as P-101	Receiver connector
P-104		Same as P-101	Receiver connector
P-105		Same as P-101	Receiver connector
P-106		Same as P-101	Receiver connector
P-107		Same as P-101	Receiver connector
P-108		Same as P-101	Receiver connector
P-109		Same as P-101	Receiver connector
P-110		Same as P-101	Receiver connector
P-111		Same as P-101	Receiver connector
P-112		Same as P-101	Receiver connector
P-113		Same as P-101	Receiver connector
P-114		Same as P-101	Receiver connector
P-115		Same as P-101	Receiver connector
P-116		Same as P-101	Receiver connector
P-117		Same as P-101	Receiver connector
P-118		Same as P-101	Receiver connector
P-119		Same as P-101	Receiver connector
P-120		Same as P-101	Receiver connector
P-121		Same as P-101	Receiver connector
P-122		Same as P-101	Receiver connector
P-123		Same as P-101	Receiver connector
P-124		Same as P-101	Receiver connector
P-125		Same as P-101	Receiver connector
P-126		Same as P-101	Receiver connector
P-127		Same as P-101	Receiver connector
P-128		Same as P-101	Receiver connector
P-129		Same as P-101	Receiver connector

The following items apply only to Electrical Filter Assy. AN/SRA-12B and Filter Panel SB404A/SRA-12

MP-1		GASKET, RUBBER, SYN. 4-1/8 in. long, 1-1/2 inch wide, 3/32 in. thick with three 1-1/8 in. holes equally spaced	Dust shield
MP-2		Same as MP-1	Dust shield
MP-3		Same as MP-1	Dust shield
MP-4		Same as MP-1	Dust shield
MP-5		Same as MP-1	Dust shield
MP-6		Same as MP-1	Dust shield
MP-7		Same as MP-1	Dust shield
MP-8		GASKET, RUBBER, SYN. 1-9/16 in. long, 1-1/2 in. wide, 3/32 in. thick with one 1-1/8 in. hole centrally located	Dust shield

TABLE 8-8. LIST OF MANUFACTURERS

DESIGNATING SYMBOL	NAME	ADDRESS
98732	Lieco Inc.	Freeport, New York
08924	General Magnetics, Inc.	Minneapolis, Minn.

INDEX

A SUBJECT	SECTION	PARAGRAPH	FIG. OR TABLE	PAGE
Antenna				
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patch panel	4	1		4-0
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Attenuation characteristics	2	2*c*	F2-2	2-1
B				
Block Diagram	2		F2-4	2-3
C				
Channels				
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sequence, revision of	4	2*b*		4-0
Color Codes	8		T8-7	8-6
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Correction Page	Front Matter			C
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D				
Data				
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substitution for filter subassemblies	4	2*b*		4-1
substitution for filter subassemblies	5	1		5-0
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servicing	6	1		6-1
testing	7	2		7-1
unpacking and inspecting	3	1		3-1
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schematic diagram	7		F7-3	7-5, 7-6
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installation	3	2*b*		3-1
routine testing	6	2*a*		6-1
schematic diagram	2		F2-1	2-1
selection	3	2*a*		3-1
typical attenuation	2		F2-2	2-1
typical combination	2	3		2-2

SECTION 1

GENERAL DESCRIPTION

References and illustrations have been changed throughout the text only to the extent for clarity. All references to Electrical Filter Assembly AN/SRA-12 and Filter Panel SB-404/SRA-12 apply equally to AN/SRA-12A and SB-565/SRA-12A, AN/SRA-12B and SB404A/SRA12 except where otherwise indicated.

1. PURPOSE OF INSTRUCTION BOOK.

This instruction book describes Electrical Filter Assembly AN/SRA-12. Included is a discussion of the theory of operation of the equipment, information on its installation, operation and maintenance, and a parts list.

2. PURPOSE AND BASIC PRINCIPLE OF EQUIPMENT.

(See figure 1-1.)

Electrical Filter Assembly AN/SRA-12 provides, by means of filter subassemblies which plug into Filter Panel SB-404/SRA-12, a maximum of seven r-f bands in the frequency spectrum between 14 kilocycles and 32 megacycles. Connections from the main chassis to an antenna and to receivers are made by coaxial patch cords in a manner similar to that employed with conventional antenna patch panels now in use in the Fleet. Any or all of the seven bands may be used simultaneously with and independently of any of the other bands.

3. DESCRIPTION OF EQUIPMENT.

(See figures 1-1 and 1-2.)

a. GENERAL.—Electrical Filter Assembly AN/SRA-12 comprises Filter Panel SB-404/SRA-12, nine filter subassemblies, and three shorting plugs.

b. FILTER PANEL SB-404/SRA-12.—Filter Panel SB-404/SRA-12 is a rack-mounted equipment with six octal receptacles on its rear face to accommodate any six of the nine filter subassemblies supplied. On the front face of the panel are 28 quick-disconnect coaxial output receptacles and one antenna input coaxial receptacle. These provide, respectively, ready connections to receivers and to an antenna or their associated patch panels.

c. FILTER SUBASSEMBLIES.—Nine filter subassemblies, designed for insertion into the octal sockets on the rear face of Filter Panel SB-404/SRA-12, are provided. Each is an hermetically sealed unit, factory calibrated, consisting essentially of inductors and capacitors. Each is identified by its cross-over frequency and by its standard Navy stock number. Each subassembly is fitted with a four-prong male plug, keyed and mating with a standard female octal socket. Any six of these subassemblies may be used at one time to provide a band of frequencies for reception in the 14 kilocycle-to-32 megacycle range.

d. SHORTING PLUGS.—Three shorting plugs (dummy plug connectors) are provided with the AN/SRA-12 equipment to provide continuity of the signal through the filter assembly in the event as many as three of the filter subassemblies are taken out of the circuit.

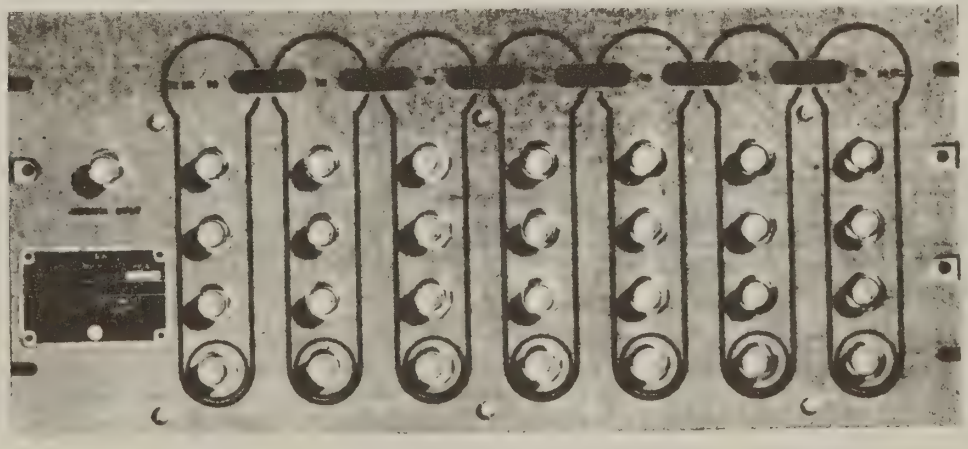


Figure 1-2. Filter Panel SB-404/SRA-12

4. REFERENCE DATA.

a. Nomenclature: Electrical Filter Assembly AN/SRA-12.

b. Contracts: NObrs 75181, 75558, 75690, 81558

c. Contractor: Lieco Inc., Freeport, N.Y., General Magnetics, Inc., Minneapolis, Minn.

d. Cognizant Naval Inspector: INSMAT, Minneapolis, Minn.

e. Number of packages complete shipment: One

f. Total cubic contents: 3.00 cu. ft.

g. Total Weight: 75.5 lbs.

h. The frequency spectrum covered by the nine filter subassemblies of Electrical Filter Assembly AN/SRA-12 extends from 14 kilocycles to 32 megacycles. Within this spectrum, a maximum of seven bands of frequencies can be provided by employing combinations of six different filter subassemblies. The cross-over frequencies of the various filter sub-assemblies are as follows: 50, 150, 300, 530, 1500, 2000, 3500, 7000 and 14,000 kilocycles.

i. To keep losses at a minimum, the input and output of Electrical Filter Assembly AN/SRA-12 should be terminated in 180 ohms, the characteristic impedance of each filter subassembly. Only a slight reflection loss results, however, when the input is terminated in 52 ohms, the nominal impedance of the coaxial cable patching to the receiver inputs.

j. The equipment supplied with Electrical Filter Assembly AN/SRA-12 is listed in table 1-1, EQUIPMENT SUPPLIED.

k. No additional accessories are necessary for the use of Electrical Filter Assembly AN/SRA-12.

l. Shipping data on Electrical Filter Assembly AN/SRA-12 are given in tables 1-1 and 1-2.

TABLE 1-1. EQUIPMENT SUPPLIED

QUANTITY PER EQUIPMENT	NAME OF UNIT	NAVY TYPE DESIGNATION	OVERALL DIMENSION			VOLUME	WEIGHT
			HEIGHT	WIDTH	DEPTH		
1	Panel, Filter	SB-404B/SRA-12	8-3/4	19	2-1/8	0.2	10-1/4
9	Filter Subassemblies	(SNSN)	4	2-1/16	3-7/16	0.01	2
3	Shorting Plugs	(SNSN)	1-25/32	1-1/4(dia)	----	---	0.1
29	Connector, Plug	UG-968B/U	1-51/64	11 (dia)			0.44
2	Instruction Book	NAVSHIPS 92206	11	8-1/2	1/4		0.2

Unless otherwise stated, dimensions are in inches, volume in cubic feet, and weight in pounds

TABLE 1-2. SHIPPING DATA

SHIPPING BOX NO.	CONTENTS		OVERALL DIMENSIONS				
	NAME	DESIGNATION	HEIGHT	WIDTH	DEPTH	VOLUME	WEIGHT
1	Filter Assembly Electrical	AN/SRA-12	18	23	12-3/4	3.0	75.5

Unless otherwise stated, dimensions are in inches, volume in cubic feet, and weight in pounds

NOTES:

1. Jacks J-105, J-109, J-113, J-117, J-121, J-125 and J-129 operate as follows:
   (A) When mating plug is connected, 180-OHM terminating resistor is disconnected.
   (B) When mating plug is disconnected, 180-OHM terminating resistor is connected to output jack.
2. All resistors are carbon composition 2 watt 10% unless otherwise indicated.

ter Panel SB-404/SRA-12, Schematic Diagram

4. REFERENCE DATA.

a. Nomenclature: Electrical Filter Assembly AN/SRA-12.

b. Contracts: NObrs 75181, 75558, 75690, 81558

c. Contractor: Lieco Inc., Freeport, N.Y., General Magnetics, Inc., Minneapolis, Minn.

d. Cognizant Naval Inspector: INSMAT, Minneapolis, Minn.

e. Number of packages complete shipment: One

f. Total cubic contents: 3.00 cu. ft.

g. Total Weight: 75.5 lbs.

h. The frequency spectrum covered by the nine filter subassemblies of Electrical Filter Assembly AN/SRA-12 extends from 14 kilocycles to 32 megacycles. Within this spectrum, a maximum of seven bands of frequencies can be provided by employing combinations of six different filter subassemblies. The cross-over frequencies of the various filter sub-assemblies are as follows: 50, 150, 300, 530, 1500, 2000, 3500, 7000 and 14,000 kilocycles.

i. To keep losses at a minimum, the input and output of Electrical Filter Assembly AN/SRA-12 should be terminated in 180 ohms, the characteristic impedance of each filter subassembly. Only a slight reflection loss results, however, when the input is terminated in 52 ohms, the nominal impedance of the coaxial cable patching to the receiver inputs.

j. The equipment supplied with Electrical Filter Assembly AN/SRA-12 is listed in table 1-1, EQUIPMENT SUPPLIED.

k. No additional accessories are necessary for the use of Electrical Filter Assembly AN/SRA-12.

l. Shipping data on Electrical Filter Assembly AN/SRA-12 are given in tables 1-1 and 1-2.

TABLE 1-1. EQUIPMENT SUPPLIED

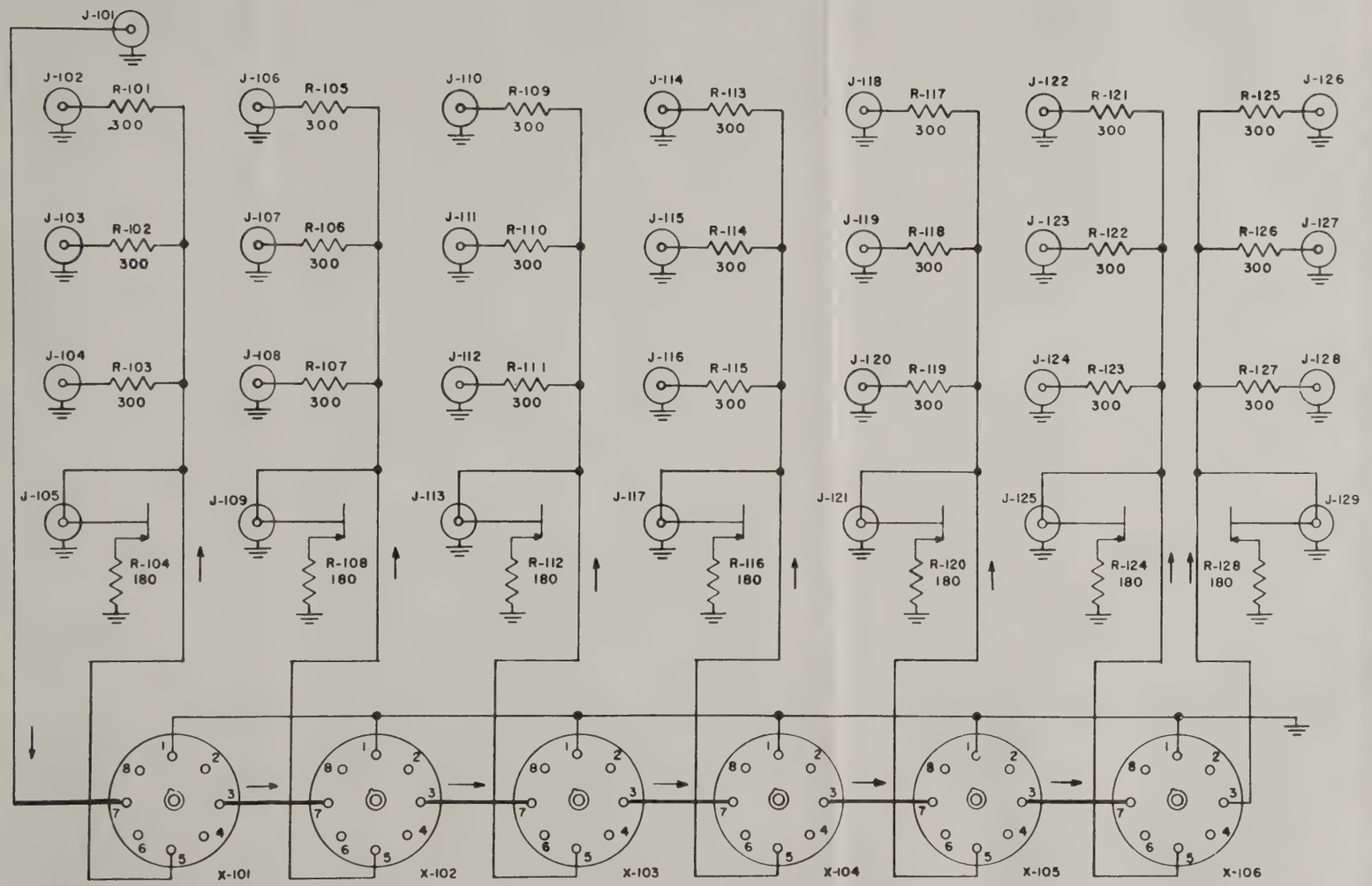
QUANTITY PER EQUIPMENT	NAME OF UNIT	NAVY TYPE DESIGNATION	OVERALL DIMENSION			VOLUME	WEIGHT
			HEIGHT	WIDTH	DEPTH		
1	Panel, Filter	SB-404B/SRA-12	8-3/4	19	2-1/8	0.2	10-1/4
9	Filter Subassemblies	(SNSN)	4	2-1/16	3-7/16	0.01	2
3	Shorting Plugs	(SNSN)	1-25/32	1-1/4(dia)	----	---	0.1
29	Connector, Plug	UG-968B/U	1-51/64	11 (dia)			0.44
2	Instruction Book	NAVSHIPS 92206	11	8-1/2	1/4		0.2

Unless otherwise stated, dimensions are in inches, volume in cubic feet, and weight in pounds

TABLE 1-2. SHIPPING DATA

SHIPPING BOX NO.	CONTENTS		OVERALL DIMENSIONS				
	NAME	DESIGNATION	HEIGHT	WIDTH	DEPTH	VOLUME	WEIGHT
1	Filter Assembly Electrical	AN/SRA-12	18	23	12-3/4	3.0	75.5

Unless otherwise stated, dimensions are in inches, volume in cubic feet, and weight in pounds



NOTES:

1. Jacks J-105, J-109, J-113, J-117, J-121, J-125 and J-129 operate as follows:
   (A) When mating plug is connected, 180-OHM terminating resistor is disconnected.
   (B) When mating plug is disconnected, 180-OHM terminating resistor is connected to output jack.
2. All resistors are carbon composition 2 watt 10% unless otherwise indicated.

Figure 7-3. Filter Panel SB-404/SRA-12, Schematic Diagram

REFERENCE DESIGNATION	STOCK NUMBERS STANDARD NAVY SIGNAL CORPS AIR FORCE	NAME AND DESCRIPTION	LOCATING FUNCTION
P-101		PLUG, CONNECTOR; UG 968B/U	Receiver connector
P-102		Same as P-101	Receiver connector
P-103		Same as P-101	Receiver connector
P-104		Same as P-101	Receiver connector
P-105		Same as P-101	Receiver connector
P-106		Same as P-101	Receiver connector
P-107		Same as P-101	Receiver connector
P-108		Same as P-101	Receiver connector
P-109		Same as P-101	Receiver connector
P-110		Same as P-101	Receiver connector
P-111		Same as P-101	Receiver connector
P-112		Same as P-101	Receiver connector
P-113		Same as P-101	Receiver connector
P-114		Same as P-101	Receiver connector
P-115		Same as P-101	Receiver connector
P-116		Same as P-101	Receiver connector
P-117		Same as P-101	Receiver connector
P-118		Same as P-101	Receiver connector
P-119		Same as P-101	Receiver connector
P-120		Same as P-101	Receiver connector
P-121		Same as P-101	Receiver connector
P-122		Same as P-101	Receiver connector
P-123		Same as P-101	Receiver connector
P-124		Same as P-101	Receiver connector
P-125		Same as P-101	Receiver connector
P-126		Same as P-101	Receiver connector
P-127		Same as P-101	Receiver connector
P-128		Same as P-101	Receiver connector
P-129		Same as P-101	Receiver connector

The following items apply only to Electrical Filter Assy. AN/SRA-12B and Filter Panel SB404A/SRA-12

MP-1		GASKET, RUBBER, SYN. 4-1/8 in. long, 1-1/2 inch wide, 3/32 in. thick with three 1-1/8 in. holes equally spaced	Dust shield
MP-2		Same as MP-1	Dust shield
MP-3		Same as MP-1	Dust shield
MP-4		Same as MP-1	Dust shield
MP-5		Same as MP-1	Dust shield
MP-6		Same as MP-1	Dust shield
MP-7		Same as MP-1	Dust shield
MP-8		GASKET, RUBBER, SYN. 1-9/16 in. long, 1-1/2 in. wide, 3/32 in. thick with one 1-1/8 in. hole centrally located	Dust shield

SECTION 8
PARTS LIST

SECTION 8
PARTS LIST

TABLE 8-1. WEIGHTS AND DIMENSIONS OF SPARE PARTS BOXES

(No equipment maintenance spare parts are furnished with this equipment.)

TABLE 8-2. SHIPPING WEIGHTS AND DIMENSIONS OF SPARE PARTS BOXES

(No equipment maintenance spare parts are furnished with this equipment.)

TABLE 8-3. LIST OF MAJOR UNITS

GROUP SYMBOL	QUANTITY	NAME OF MAJOR UNIT	AN DESIGNATION
101-199	1	ELECTRICAL FILTER ASSEMBLY	AN/SRA-12

TABLE 8-4. TABLE OF REPLACEABLE PARTS

REFERENCE DESIGNATION	STOCK NUMBERS STANDARD NAVY SIGNAL CORPS AIR FORCE	NAME AND DESCRIPTION	LOCATING FUNCTION
101-199	N17-F-048350-2441	ELECTRICAL FILTER ASSEMBLY, AN/SRA-12; consists of Filter Panel SB-404/SRA-12, nine filter subassemblies, three dummy connector plugs, and 29 connector plugs UG-968/U; rectangular shape; steel; 19 in. lg; 5-9/16 in. deep (inc. mtd. filters); 8-3/4 in. high; mounts in standard relay rack by means of four or eight machine screws; 29 connector, receptacles, quick-disconnect type, on front panel.	
J-101	N17-C-99999-1135	CONNECTOR,RECEPTACLE; 1 contact, female, round type; straight type connector; 1-3/8 in. lg, 1-5/16 in. dia.; radio-frequency connector, 52 ohms nominal impedance, constant-frequency impedance characteristic; cylindrical shape; brass, silver plated, quick-disconnect locking type; teflon insert; mounts in 3/4 in. dia hole with 1-5/16 in. dia coupling nut; GU Part No. 34-0022.	Antenna input receptacle
J-102		Same as J-101	Output receptacle
J-103		Same as J-101	Output receptacle
J-104		Same as J-101	Output receptacle
J-105	N17-C-99999-1136	CONNECTOR, RECEPTACLE same as J-101 except for: switching feature which provides automatic connection of externally mounted terminating resistor when associated connector plug is removed and for automatic disconnection of terminating resistor when associated connector plug is inserted; GU Part No. 34-0023.	Output receptacle
J-106		Same as J-101	Output receptacle
J-107		Same as J-101	Output receptacle
J-108		Same as J-101	Output receptacle
J-109		Same as J-105	Output receptacle
J-110		Same as J-101	Output receptacle
J-111		Same as J-101	Output receptacle
J-112		Same as J-101	Output receptacle

REFERENCE DESIGNATION	STOCK NUMBERS STANDARD NAVY SIGNAL CORPS AIR FORCE	NAME AND DESCRIPTION	LOCATING FUNCTION
J-113		Same as J-105	Output receptacle
J-114		Same as J-101	Output receptacle
J-115		Same as J-101	Output receptacle
J-116		Same as J-101	Output receptacle
J-117		Same as J-105	Output receptacle
J-118		Same as J-101	Output receptacle
J-119		Same as J-101	Output receptacle
J-120		Same as J-101	Output receptacle
J-121		Same as J-105	Output receptacle
J-122		Same as J-101	Output receptacle
J-123		Same as J-101	Output receptacle
J-124		Same as J-101	Output receptacle
J-125		Same as J-105	Output receptacle
J-126		Same as J-101	Output receptacle
J-127		Same as J-101	Output receptacle
J-128		Same as J-101	Output receptacle
J-129		Same as J-105	Output receptacle
P-101	N17-C-71417-9226	PLUG, CONNECTOR; UG-968/U	Receiver connector
P-102		Same as P-101	Receiver connector
P-103		Same as P-101	Receiver connector
P-104		Same as P-101	Receiver connector
P-105		Same as P-101	Receiver connector
P-106		Same as P-101	Receiver connector
P-107		Same as P-101	Receiver connector
P-108		Same as P-101	Receiver connector
P-109		Same as P-101	Receiver connector
P-110		Same as P-101	Receiver connector
P-111		Same as P-101	Receiver connector
P-112		Same as P-101	Receiver connector
P-113		Same as P-101	Receiver connector
P-114		Same as P-101	Receiver connector
P-115		Same as P-101	Receiver connector
P-116		Same as P-101	Receiver connector
P-117		Same as P-101	Receiver connector
P-118		Same as P-101	Receiver connector
P-119		Same as P-101	Receiver connector
P-120		Same as P-101	Receiver connector
P-121		Same as P-101	Receiver connector
P-122		Same as P-101	Receiver connector
P-123		Same as P-101	Receiver connector
P-124		Same as P-101	Receiver connector
P-125		Same as P-101	Receiver connector
P-126		Same as P-101	Receiver connector
P-127		Same as P-101	Receiver connector
P-128		Same as P-101	Receiver connector
P-129		Same as P-101	Receiver connector

REFERENCE DESIGNATION	STOCK NUMBERS STANDARD NAVY SIGNAL CORPS AIR FORCE	NAME AND DESCRIPTION	LOCATING FUNCTION
P-130	N17-C-11542-3501	DUMMY CONNECTOR; octal type, male, round; 7/16 in. dia, 1-1/4 in. lg; cylindrical shape; bakelite; no. 22 bare tinned wire soldered between pins nos. 3 and 7; with cover; GU Part No. 34-4273	Shorting plug
P-131		Same as P-130	Shorting plug
P-132		Same as P-130	Shorting plug
R-101	N16-R-49697-126	RESISTOR, FIXED, COMPOSITION; 300 ohms total resistance, 5% tolerance; 2 watts power dissipation; JAN-RC42BF301J; for general purpose use	Decoupling resistor
R-102		Same as R-101	Decoupling resistor
R-103		Same as R-101	Decoupling resistor
R-104	N16-R-49642-977	RESISTOR, FIXED, COMPOSITION; 180 ohms total resistance, 10% tolerance; 2 watts power dissipation; JAN-RC42BF181K; for general purpose use	Terminating resistor
R-105		Same as R-101	Decoupling resistor
R-106		Same as R-101	Decoupling resistor
R-107		Same as R-101	Decoupling resistor
R-108		Same as R-104	Terminating resistor
R-109		Same as R-101	Decoupling resistor
R-110		Same as R-101	Decoupling resistor
R-111		Same as R-101	Decoupling resistor
R-112		Same as R-104	Terminating resistor
R-113		Same as R-101	Decoupling resistor
R-114		Same as R-101	Decoupling resistor
R-115		Same as R-101	Decoupling resistor
R-116		Same as R-104	Terminating resistor
R-117		Same as R-101	Decoupling resistor
R-118		Same as R-101	Decoupling resistor
R-119		Same as R-101	Decoupling resistor
R-120		Same as R-104	Terminating resistor
R-121		Same as R-101	Decoupling resistor
R-122		Same as R-101	Decoupling resistor
R-123		Same as R-101	Decoupling resistor
R-124		Same as R-104	Terminating resistor
R-125		Same as R-101	Decoupling resistor
R-126		Same as R-101	Decoupling resistor
R-127		Same as R-101	Decoupling resistor
R-128		Same as R-104	Terminating resistor
X-101	N16-S-63515-4158	SOCKET, ELECTRON TUBE; octal; JAN-TS101P02	Mounts filter subassembly
X-102		Same as X-101	Mounts filter subassembly
X-103		Same as X-101	Mounts filter subassembly
X-104		Same as X-101	Mounts filter subassembly
X-105		Same as X-101	Mounts filter subassembly
X-106		Same as X-101	
Z-101	N16-F-32558-5354	FILTER SUBASSEMBLY; high-pass, low-pass; 50 kc to 14 kc (LP), 32 mc to 50 kc (HP); GU Part No. 34-4274	Fifty kilocycle filter subassembly
Z-102	N16-F-32608-3241	FILTER SUBASSEMBLY; high-pass, low-pass; 150 kc to 14 kc (LP), 32 mc to 150 kc (HP); GU Part No. 34-4279	One hundred fifty kilocycle filter subassembly

REFERENCE DESIGNATION	STOCK NUMBERS STANDARD NAVY SIGNAL CORPS AIR FORCE	NAME AND DESCRIPTION	LOCATING FUNCTION
Z-103	N16-F-32635-6249	FILTER SUBASSEMBLY; high-pass, low-pass; 300 kc to 14 kc (LP), 32 mc to 300 kc (HP); GU Part No. 34-4283	Three hundred kilocycle filter subassembly
Z-104	N16-F-32677-5761	FILTER SUBASSEMBLY; high-pass, low-pass; 530 kc to 14 kc (LP), 32 mc to 530 kc (HP); GU Part No. 34-4285	Five hundred thirty kilocycle filter subassembly
Z-105	N16-F-41335-1901	FILTER SUBASSEMBLY; high-pass, low-pass; 1500 kc to 14 kc (LP), 32 mc to 1500 kc (HP); GU Part No. 34-4290	Fifteen hundred kilocycle filter subassembly
Z-106	N16-F-32686-7361	FILTER SUBASSEMBLY; high-pass, low-pass; 2000 kc to 14 kc (LP), 32 mc to 2000 kc (HP); GU Part No. 34-4293	Two thousand kilocycle filter subassembly
Z-107	N16-F-32700-1361	FILTER SUBASSEMBLY; high-pass, low-pass; 3500 kc to 14 kc (LP), 32 mc to 3500 kc (HP); GU Part No. 34-4296	Thirty five hundred kilocycle filter subassembly
Z-108	N16-F-32705-5361	FILTER SUBASSEMBLY; high-pass, low-pass; 7000 kc to 14 kc (LP), 32mc to 7000 kc (HP); GU Part No. 34-4288	Seven thousand kilocycle filter subassembly
Z-109	N16-F-32716-5079	FILTER SUBASSEMBLY; high-pass, low-pass; 14 mc to 14 kc (LP), 32 mc to 14 mc (HP); GU Part No. 34-4302	Fourteen megacycle filter subassembly

TABLE 8-5. MAINTENANCE PARTS KIT

(All maintenance parts are from normal stock issue and none is supplied with this equipment.)

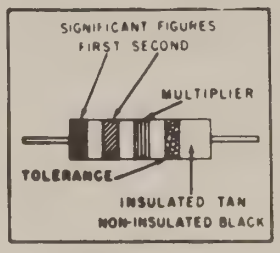
TABLE 8-6. CROSS-REFERENCE PARTS LIST

STANDARD NAVY STOCK NUMBER	KEY SYMBOL	JAN TYPE NO.	KEY SYMBOL
F16-F-48404-1001	101-199	RC42BF181K	R-104
N16-F-32558-5354	Z-101	RC42BF301J	R-101
N16-F-32608-3241	Z-102	TS101P02	X-101
N16-F-32635-6249	Z-103	UG-968/U	P-101
N16-F-32677-5761	Z-104		
N16-F-32686-7361	Z-106		
N16-F-32700-1361	Z-107		
N16-F-32705-5361	Z-108		
N16-F-32716-5079	Z-109		
N16-F-41335-1901	Z-105		
N16-R-49642-977	R-104		
N16-R-49697-126	R-101		
N16-S-63515-4158	X-101		
N17-C-11542-3501	P-130		
N17-C-71417-9226	P-101		
N17-C-99999-1135	J-101		
N17-C-99999-1136	J-105		

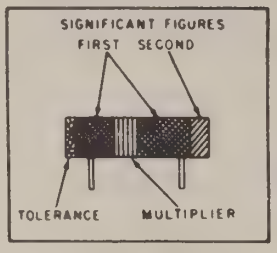
TABLE 8-7. APPLICABLE COLOR CODES AND MISCELLANEOUS DATA

RESISTOR COLOR CODES

RETMA COLOR CODE FOR FIXED COMPOSITION RESISTORS

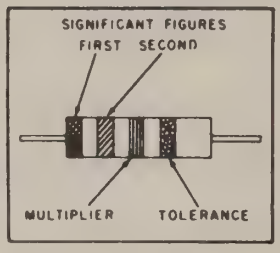


AXIAL TYPE

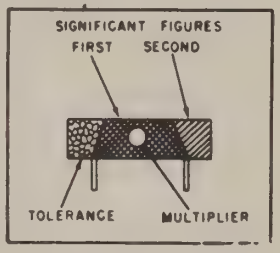


RADIAL TYPE

JAN COLOR CODE FOR FIXED COMPOSITION RESISTORS



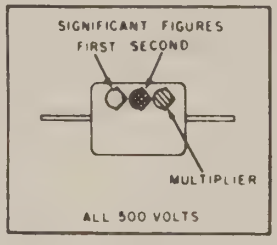
AXIAL TYPE INSULATED



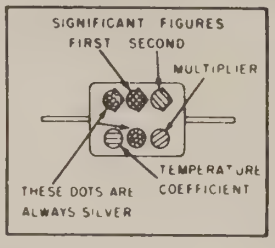
RADIAL TYPE NON-INSULATED

CAPACITOR COLOR CODES

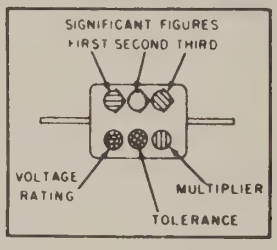
RETMA 3-DOT COLOR CODE FOR MICA-DIELECTRIC CAPACITORS



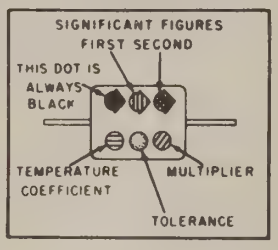
JAN 6-DOT COLOR CODE FOR PAPER DIELECTRIC CAPACITORS



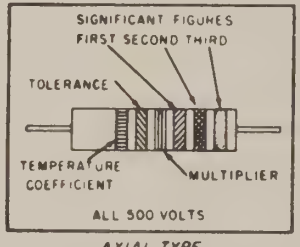
RETMA 6-DOT COLOR CODE FOR MICA-DIELECTRIC CAPACITORS



JAN 6-DOT COLOR CODE FOR MICA-DIELECTRIC CAPACITORS

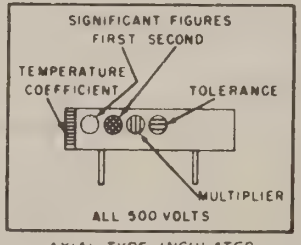


RETMA COLOR CODE FOR TUBULAR CERAMIC DIELECTRIC CAPACITORS

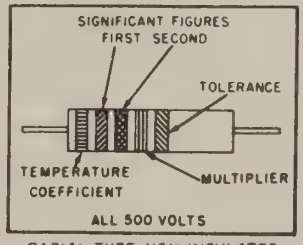


AXIAL TYPE

JAN COLOR CODE FOR TUBULAR CERAMIC CAPACITORS



AXIAL TYPE INSULATED



RADIAL TYPE NON-INSULATED

COLOR	SIGNIFICANT FIGURE	MULTIPLIER	PERCENT TOLERANCE	VOLTAGE RATING	TEMPERATURE COEFFICIENT
BLACK	0	1			A
BROWN	1	10		100	B
RED	2	100		200	C
ORANGE	3	1,000		300	D
YELLOW	4	10,000		400	E
GREEN	5	100,000		500	F
BLUE	6	1,000,000		600	G
VIOLET	7			700	
GRAY	8	0 1*		800	
WHITE	9	0 01*		900	
GOLD	0 1	0 1	5	1000	
SILVER	0 01	0 01	10	2000	
NO COLOR			20	500	

* JAN TUBULAR CERAMIC CAPACITORS ONLY
NOTE: JAN JOINT ARMY-NAVY, RETMA, RADIO ELECTRONICS TELEVISION MANUFACTURERS ASSOCIATION

TABLE 8-8. LIST OF MANUFACTURERS

DESIGNATING SYMBOL	NAME	ADDRESS
CBZS	Lieco Inc.	Freeport, New York

INDEX

SUBJECT	SECTION	PARAGRAPH	FIG. OR TABLE	PAGE
A				
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B				
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C				
Channels				
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substitution for filter subassemblies	6	2*a*		6-1
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components	1		F1-1	1-0
description	1		T1-1	1-2
purpose and basic principles	1	2		1-1
routine checking	5	1		5-0
servicing	6	1		6-1
testing	7	2		7-1
unpacking and inspecting	3	1		3-1
F				
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Faulty performance	7	2*a*		7-1
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routine testing	6	2*a*		6-1
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SUBJECT	SECTION	PARAGRAPH	FIG. OR TABLE	PAGE
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H				
I				
Impressed voltages	2	5		2-3
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UG-968/U	3	2*d*	F3-3	3-2, 3-3
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K				
L				
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R				
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Servicing	7	1		7-1
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	3		F3-1	3-0
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Voltages impressed	2	5		2-3
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Y				
Z				

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